

American **FORESTS**

MARCH, 1959

50 CENTS



A Salute to
OUR TRAIL RIDERS OF THE WILDERNESS

See Pages 6 and 13



WILL IT
PAY TO

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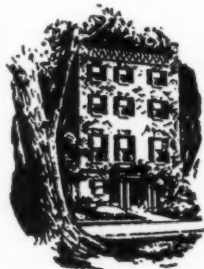
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Art Director

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COVER • Photograph by John B. Schutte, postmaster of Glenwood Springs, Colorado, a veteran of six Trail Riders of the Wilderness Expeditions. (See article on page 7)



The AFA

The American Forestry Association, publishers of *American Forests*, is a national organization—independent and non-political in character—for the advancement of intelligent management and use of forests and related resources of soil, water, wildlife and outdoor recreation. Its purpose is to create an enlightened public appreciation of these resources and the part they play in the social and economic life of the nation. Created in 1875, it is the oldest national forest conservation organization in America.

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Forest Forum

The Gilligan Article

EDITOR:

Mr. Gilligan's analysis of the wilderness problem in your January issue is very good as far as it goes, but it represents the typical forester's materialistic, timber-bound views.

How many things Mr. Gilligan, despite his thorough familiarity with the subject, has overlooked, or perhaps has never taken into consideration!

Mr. Gilligan writes as if the God-given beauties of nature were all to be assessed in material terms. Nowhere does he mention the need of men for wilderness and its magnificent panoramas as sights to lift up their eyes—as things of beauty that are a joy forever. Extend his views a little and you would find the tree-choppers climbing up to every merchantable timberline and defacing the scenery, and every shepherd unloosing his hoofed flocks on highland grazing lands. Wherever a dollar might be made, the spoilers would be there, if society in its wisdom did not put some legislative restraints on them.

Has Mr. Gilligan projected himself a century hence, when, the Census Bureau tells us, the population of the United States will be 480,000,000, with a density greater than that of present-day China? Assume that his views prevail, and our magnificent country would have precious little wilderness left. The tree-choppers, the wool growers, the mad highway builders, the airplane enthusiasts, will have it all staked out, cut up, saturated with gasoline fumes, probably littered with trash from teeming recreationists, and so on, not to mention the slag heaps of mining enterprises, the hotels and motels, tourist cabins and summer homes.

What will America be then, if steps are not taken soon to put aside our wild and wilderness areas so that the exploiters can never get at them?

One more point about Mr. Gilligan's views. He lays much stress on local autonomy over the disposition of wilderness areas, a typical 19th century view that forgets that this God-given American earth does not belong to any arbitrary local political entity but to all the people. For example, the Three Sisters Wilderness in Oregon cannot be said to be the property of the state of Oregon but of all of us no matter where we live, since it is in federal hands—and that means that every American owns a share of it, whether he ever sees it or not.

No, AMERICAN FORESTS, in bolstering its peculiar opposition to the Wilderness Bill, must come up with more sophisticated and perceptive arguments than Forester Gilligan has expressed.

Anthony Netboy
2344 S. W. Mitchell Street
Portland 19, Oregon

The Body Still Breathes

EDITOR:

I don't give a hoot what sort of Wilderness Bill is passed just as long as it gets here quick and has plenty of teeth. I do know that so long as our forests and wilderness are well-protected at the present we can wrangle about their future uses with no loss to them. But with little protection, as seems to be the case today, we find less to wrangle over at the close of each day.

Regarding your reply note to the letter of Mr. Randal F. Dickey, in the January issue of AMERICAN FORESTS, I feel sure Mr. Dickey, myself, and all interested non-professionals would sit back and rest our oars were we assured that all said professionals were completely free to think and act in the manner in which they were trained. But, where many professionals today, perhaps out of necessity, will turn handsprings for hamburgers, knowing that industry, unlike us ill-advised citizens, always has a goodly supply of hamburgers to wave in front of the noses of the hungry, we feel our arguments well-directed but lacking steam.

We disgruntled citizens also realize our shortcomings in competing with industry for your favors. For it does seem that the ability to furnish new doors or to buy the inside of the front page or either the inside or the outside of the back page of AMERICAN FORESTS is beyond us. Nevertheless, I feel you have all our sympathy. I think you are doing a good job considering the burden you carry.

Contrary to Mr. Dickey's ways, I am staying in. I can't do any good on the outside and by sticking around, I will at least see which way they drag the body.

Eben McMillan
Cholame, California

The New Front Door

EDITOR:

I am quite lost in admiration for the January issue of AMERICAN FORESTS, and thought that I would write and tell you so.

First off there is the door, in itself a masterpiece of art and beauty, with the high distinction of the poem and editorial accompanying it. As if these were not excitement enough, the issue also contains the Jean Giono article, and the delightful fishing piece "You get a Line."

In the miniature apartment in which I live, I've not room for even an extra book; but I intend to preserve AMERICAN FORESTS, January, 1959 as long as I preserve myself.

Viola C. White
2 Park Street
Middlebury, Vermont

EDITOR:

Just wish to tell you how very much I enjoyed your editorial "A Fragment of A Star." I think it is perfectly delightful—"it reflects the sun's rays in a warm, golden glow"—then down to the earthy everyday life—"The way it grows—so arrow straight . . . I hope this doesn't disappear like that did."

I have been handling doors for nearly fifty years, and I feel just as I imagine you must about them. I have a large photo of the famous Ghiberti door on my office wall and it is beautiful—but a well-designed and manufactured wooden door is lovely too.

You are to be congratulated that under your inspired handling what is perhaps, to many, just a prosaic and ordinary convenience in a building has become "a thing of beauty and a joy forever."

George H. Parks, President
General Sash and Door Co.
Tulsa, Oklahoma

Kudos For Bush

EDITOR:

Kudos to your reviewer, Monroe Bush, for his comments (January, 1959) on the *Handbook for Teaching Conservation and Resource-Use*. He focuses sharply on a problem familiar to those of us, and our name is legion, now fighting for the restoration of quality in American education.

The greatest single need of our public schools is for the teacher who, in addition to possessing a solid liberal education, is thoroughly trained in and devoted to the subject he teaches; who continues to read widely and deeply, and who perchance will contribute to the advancement of his field through research and active participation in it. Such teachers are rare, in conservation or any other field.

The principal reason they are rare lies with those "thousands of bureaucrats and professors of education" who now run our public schools, who are often without a sound education themselves, and who in their self-assumed omniscience have decided that a teacher's mastery of subject matter is only incidental; that methodology, far from being a mere adjunct to good teaching, is an end in itself. They have therefore proceeded, in accordance with Parkinson's Law, to invent, elaborate, refine, and redevelop *ad infinitum, ad nauseam*, the "pedagogic tricks and gimmicks" that Mr. Bush speaks of and that are then foisted upon the teacher at the expense of his substantive grasp of the field.

This *Handbook* is a case in point: If the high school biology teachers to whom it is addressed were equipped in the first place

VALUABLE TIMBER



.. saved by the **BELL!**

PHOTOGRAPH COURTESY U. S. FOREST SERVICE

New strategy for fighting forest fires... a Bell helicopter laying down a 15-foot swath of water or chemical solution, with speed, precision and safety. Just another way the helicopter is helping make dramatic cuts in the loss of valuable forest land.

Other expert jobs the Bell can do: coordinate all ground action; rush replacements to critical areas; lift fire control equipment over inflammable forests to strategic points of attack; lay hose line; fly out the injured and fatigued; heal the wounds left by fire's ravages through rapid reseeding.

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with a thorough education in their field, such a collection of rudimentary case studies as constitute this volume would be superfluous; but since they are not so equipped, they will have to fall back upon, or so the book's compilers assume, a kind of wide-eyed, let's-discover-Nature-together approach. This approach may be good fun (as suggested by the flyleaf photograph in the book—a group of youngsters fishing in the neighborhood pond), but it hardly promises to produce citizens literate about the crisis of conservation in the United States.

In short, having just pushed my way through this book's 439 pages of text, and having unavoidably concluded that it is nothing so much as a massive adumbration of the obvious, I heartily endorse Mr. Bush's assessment.

James D. Koerner
Executive Secretary
Council for Basic Education
208 Union Trust Building
Washington 5, D. C.

EDITOR:

Please refer to the "review" of *Handbook for Teaching of Conservation and Resource Use* by Richard L. Weaver, on page 42 of your January, 1959 issue.

Just what is this book about? The reviewer doesn't say. Maybe some of your readers, including the distinguished leaders mentioned in the last paragraph, would like to know.

Shirley W. Allen
Professor Emeritus of Forestry
School of Natural Resources
Ann Arbor, Michigan

Brickbats for Bush

EDITOR:

Your reviewer, Monroe Bush, is entitled to his opinion of Joseph Krutch's book on the Grand Canyon. I haven't read it, so I have no right to disagree.

He, however, admitting that he has never visited the place, is not entitled to his statement that "The Grand Canyon, despite its

immensities, is simply not big enough for a book."

It isn't a question of "immensities" but of facets. The geological, ecological, historical, scenic and legendary aspects of the canyon are far more vital than its size, and any one of these features is "big enough for a book."

I've explored the canyon, from both rims, since 1924 on frequent trips. I believe that Bush punctured his own balloon when he admitted that he had never been there.

Dick Carpenter
505 York Rd.
Jenkintown, Pa.

The Garnjobst Letter

EDITOR:

I should like to comment on Dr. Garnjobst's letter concerning the inclusion of more technical articles in *AMERICAN FORESTS*.

I have been a subscriber for several years, and during this time the magazine has been steadily improving. The January issue is excellent. Being a professional forester and exposed to technical matter most of the time, I find it refreshing to be able to read a publication dealing with the non-technical aspects of forestry. Articles on forestry in other countries, as well as political and social aspects of the profession are, in the long run, perhaps more important than technical problems.

AMERICAN FORESTS is basically a magazine for the layman; however, I feel it should be read by all professional foresters. Let's keep it the way it is.

I might also say to Dr. Garnjobst that there is very little or no meat in many technical articles. For articles on silviculture, soils, plant physiology, etc., I would recommend the *Journal of Forestry*, published by the Society of American Foresters, which I also receive monthly. This is also available to non-foresters by subscription.

Congratulations on a superb magazine, and let's have more color pictures. Perhaps you could introduce a series on forestry in the 49 states similar to your Arizona coverage.

Carl J. Sagmuller
Montana State Forestry Dept.
Montana State University
Missoula, Montana

Spruce Gumming

EDITOR:

Yesterday, I was happy to receive a letter from Mrs. Frances Blanchard, retired social editor of the *Boston Herald*, enclosing a reprint of "Spruce Gumming in Old New England," published in the *Worcester* (Massachusetts) *Evening Gazette*, January 15, 1959. I am giving you this clipping, as I have the same thing in the copies of *AMERICAN FORESTS*.

Mrs. Blanchard wrote me in part: "I thought that you might enjoy seeing your Spruce Gum article as it appeared on the editorial page of the *Worcester Gazette* this week. It is very interesting, and intrigued me because I used to dig spruce gum off of the spruce trees in our yard in Westboro (Massachusetts) when I was a child."

"You didn't say in your story that when you have worn out spruce gum by chewing it too long, it crumbles and fades to a pinkish color. There was an imitation spruce gum that we used to buy in the candy stores that lacked the real spruce pungent flavor."

J. Almus Russell
1100 Colonial St.
Bloomsburg, Pa.

Sixth Watershed Congress



Mr. Hope

Former Rep. Clifford R. Hope, of Kansas, one of the nation's outstanding water conservationists, has accepted an invitation to be the keynote speaker at the Sixth National Watershed Congress, May 25-27, at the Statler Hotel in Washington, D. C. Theme of the congress will be "Five Years of Progress," and Mr. Hope's topic will be "The March of Watershed Progress."

Invitations have also been extended to President Eisenhower, Secretary of Agriculture Ezra Taft Benson, and Governor Howard J. Edmondson, of Oklahoma. The General Committee,

headed by C. R. Gutermuth, said it was particularly hopeful that the President could address the Congress' Annual Banquet the evening of May 25. The President replied that his schedule was such that he could not give a firm reply until the third week in April.

Purpose of bringing the congress back to Washington after regional meetings in Oklahoma, Georgia, and Texas is to review progress in small watersheds management since the formation of the congress, and to give members of the House and Senate an opportunity to engage in such a review.

Features of the congress will be presentation of five or six representative case histories by local organizations engaged in watershed development, and a general session on problems likely to be encountered in the next five years. A panel composed of top-flight administrators and legislators, to be moderated by a nationally-known news commentator, will also be a big attraction.

A star attraction at previous congresses has been the annual watershed tour, and the presentation in Washington, D. C. should be of outstanding interest as a prime example of pressures caused by people on resources. With the aid of Lathrop E. Smith, president of the Rock Creek Watershed Association, and other Washington and Maryland civic leaders, plans are now being made to take the delegates on a tour of the Rock Creek Watershed—an area of approximately 76 square miles which contains the homes of over 250,000 people in 45 communities, ranging from highly urban to attractive farm and woodland areas. Recurring floods, destruction of recreation and play areas, health dangers, destructive land practices, and poor farm practices are some of the problems being encountered in this promising area at the doorstep of the nation's capital. The problems presented by this watershed should be of special interest to foresters and agriculturalists, for it is one that is by no means confined to the Greater Washington area.

A BIG FOLLOWING

from Washington to West Virginia



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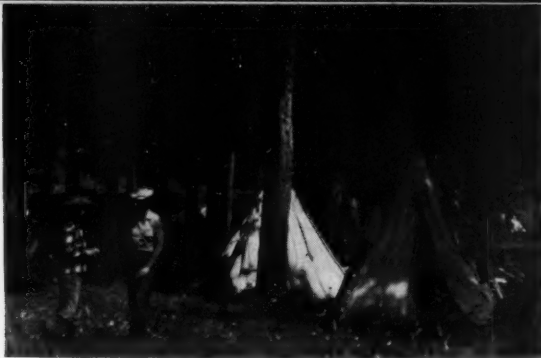
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After a day's travel on the Wind River Expedition these Trail Riders decided to pitch their camp at Clear Creek



Riders pause to admire magnificent mountain scene



Dorothy Dixon Announces the Western
Trail Riders of the Wilderness Expeditions



"Riders Up!"

Group fords Green River in the Wind River Mountains of Wyoming. Two expeditions are scheduled to explore the historic region of Bridger National Forest this year



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Trail Riders cross summit of Buckskin Pass, elevation 12,800 feet, on Maroon Bells-Snowmass Expedition. This trip, in open mountain country, includes spectacularly colorful section of the Rocky Mts.

THE most intriguing, primitive country between the land of pueblos and purple deserts in the Southwest, the lofty, rugged, alpine region of the High Sierras, and the glaciated peaks of the northern Rocky Mountains will challenge the Trail Riders of the Wilderness this summer. Fifteen expeditions are scheduled, 14 by horseback and one by canoe, through 10 fascinating wilderness areas. The cheerful call of "Riders Up!" will start the riders on their way each day.

The season's first expedition, beginning July 7, will venture into the High Uintas Wilderness Area in the Ashley National Forest—a region of many lakes, mountain streams, and dense coniferous forests. A group of 20 horseback riders, after assembling at the Vernal Hotel, Vernal, Utah, will spend 10 days exploring this far-flung wild land at the "back of the beyond." Fishing grounds here are considered excellent. Bob Davis will again outfit this party.

(Turn to page 43)



John B. Schutte

After "catching" their dinner, riders enjoyed fine meal on shore of Spangle Lake. Area is included in Sawtooth Expedition, long-time favorite of riders



John B. Schutte, postmaster of Glenwood Springs, Colorado, is a veteran of 6 Trail Rider Expeditions, and an avid outdoor photographer. The photographs appearing on these pages and the cover photograph in color were taken by Mr. Schutte on his various trips. All of his hobbies, of which he has many, are associated with the outdoors—trout fishing, fly tying, hunting deer and elk, horseback riding, photography, and pack trips with the Trail Riders. Mr. Schutte is taking another trip with the Trail Riders this summer.



Dam at Lake Piedmont, one of the many flood control reservoirs in the Muskingum Watershed Conservancy District of Ohio

The Muskingum Stands Firm

DEVASTATING floods struck a five-state area in the Midwest a vicious blow in January. Damage in Ohio alone was set at 100 million dollars. Thousands of homes were swept away where forgetful people continued to build in low areas that have experienced serious floods in the past. As the waters finally receded, citizens in Columbus and elsewhere headed for their homes with brooms and shovels to clear away acres of rich topsoil, in the form of silt, that had been deposited in their front yards, living rooms and kitchens. One man who had every right to say "I told you so!"—and did—was Don Weaver, editor of the *Scripps-Howard Columbus Citizen*. Two weeks before the flood, Weaver, an ardent campaigner for the recently abandoned Scioto-Sandusky Conservancy District, had predicted flatly that Columbus might experience a bad flood. When it happened, he

front-paged a three-column map of the proposed district and appropriately slugged it with the caption, "It Could Have Been."

But what of that former bad actor, the Muskingum River? In days gone by, the Muskingum would have been leading the onslaught of the Four Horsemen in spreading death and misery. Headlines in New Philadelphia and Dover newspapers told the story. The story was that the Muskingum was standing firm, as Army engineers turned the wheels that caused high water to back up into 14 dams and dry reservoirs built by the Muskingum Watershed Conservancy District on tributaries of the former marauder. A two-column headline in the Cleveland, Ohio, *Plain Dealer* over a New Philadelphia story told it all. "Flood Control Dams Now Proving Their Worth," the headline said.

"We know there would have been

extremely heavy damage had it not been for the dam system," Bryce C. Browning, executive secretary of the district told a *Plain Dealer* correspondent. Browning and other civic leaders headed the campaign years ago that led to the ambitious Muskingum flood control program in the days of the depression.

"The Corps of Engineers did one of the finest jobs we have ever seen in the control of flooding in this area," Walter C. Begland, of the district's Land Department told *American Forests*. "They are to be given a lot of credit for the operation of our dams and reservoirs."

According to the corps, the following figures, which give the actual stage reached by the streams at various points, and the flood stage that would have been reached if dams and reservoirs of the Muskingum Con-

(Turn to page 63)

Washington



Lookout

By ALBERT G. HALL

ADMINISTRATION ATTEMPTS TO HOLD SPENDING IN LINE WITH INCOME are reflected in the budget items for forestry and related conservation activities. Modest cuts have been suggested in some forestry items (see tabulation page 62), but with few exceptions the forestry programs of the federal agencies will be able to continue at about the same level as in Fiscal Year 1958. Total Forest Service request is \$6.8 million less than that estimated for last year, but \$2.5 million of this is made up of a non-recurring item for construction of research facilities. Other reductions include about \$1.5 million from funds for development of recreational facilities on national forests, \$.7 million in funds for emergency insect control programs, and \$2.4 million from employee housing and other structural improvements. An increase for timber sales administration of \$2.8 million will make possible the sale of 10 billion board feet of national forest timber during the fiscal year.

WHILE THE REQUEST FOR FOREST RESEARCH FUNDS remains the same as for Fiscal 1958, there is a possibility that these might be increased somewhat. Forest Farmers Association of Atlanta, Georgia, has asked the House Appropriations Committee for additional research funds for the South, and for increases for recreation and wildlife management.

STATE AND PRIVATE FORESTRY FUNDS are requested at the same level as for the current year, except for federal aid to state forest tree nursery programs under the Clarke-McNary Act. The Administration is attempting to have the states gradually pick up the total burden of operation of forest tree nurseries. It is expected, however, that efforts of the Association of State Foresters to have these funds restored will be effective. The association is also asking the Congress to increase the federal appropriation for cooperative forest fire control to \$20 million dollars instead of the \$10 million now in the budget. The state foresters are using the findings of a study made by the Battelle Memorial Institute which indicate that the federal contribution to state and private forest fire control should be proportionately larger than at present. While it is unlikely that the Congress will go all the way to \$20 million on this item, some increase is anticipated.

REPRESENTATIVES OF SOME OF THE WESTERN FOREST INDUSTRIES have asked for further increases in timber management and access road funds for both the Forest Service and the Bureau of Land Management, in order to accelerate the management of the northwestern forests and to provide more timber for industry use.

STRONG EFFORTS ARE BEING MADE BY CONSERVATION ORGANIZATIONS to increase the funds for forest fire control in Alaska. Last year the Bureau of Land Management was able to start work on smoke jumper stations in Alaska, but unless additional funds are made available, the agency will be unable to man these facilities in 1959.

FUNDS FOR FORESTRY on Indian lands, in the national parks, and in the TVA programs remain at about the same levels as in 1958.

CONSIDERABLE ENTHUSIASM FOR A YOUTH CONSERVATION CORPS PROGRAM, similar to the Civilian Conservation Corps program of the 1930's and early 1940's, is being generated by Senator Humphrey of Minnesota, who introduced a bill for this purpose, with 19 co-sponsors. In the House, Representatives Blatnik of Minnesota and Pfost of Idaho have introduced similar bills. While recognizing that the CCC program made record accomplishments in forestry and related conservation

(Turn to next page)

fields, it is believed by many persons that a similar program is not essential either to forestry advancement or to youth employment at this time. The measure has great political potential, however.

THE NATIONAL OUTDOOR RECREATION RESOURCES REVIEW COMMISSION, established last year but just getting under way in its study of recreational needs and potentials, has two new Senate appointees: Senators Dworshak of Idaho and Martin of Iowa have been named to fill the commission spots formerly held by Senators Watkins of Utah and Barrett of Wyoming. Other Senate members are Anderson of New Mexico and Neuberger of Oregon. House members are Representatives Ullman of Oregon, Pfof of Idaho, Collier of Illinois, and Saylor of Pennsylvania. In view of the far-reaching study to be headed by this commission, it is expected that action on the proposed National Wilderness Preservation System will be delayed until the commission reports to the Congress in 1961.

HEARINGS HELD BY SENATE SMALL BUSINESS COMMITTEE on the problems of small forest industry were concluded January 31 in Washington, D. C. An earlier hearing had been held in Superior, Wis., in November. As in the Wisconsin hearing, little support for or need for further federal legislation specifically in behalf of the small operators was evident. There are indications, however, that small forest industry is not taking full advantage of such programs as Small Business Administration loans, federal technical assistance, etc. It is expected that the Small Business Committee will recommend that the federal agencies step up the pace of their programs among small operators.

FOR PREFERENTIAL TREATMENT IN THE PURCHASE OF FEDERAL TIMBER as required under the Morse amendments to the Small Business Act, Small Business Administration has set a cut-off size of 100 employees in its definition of small forest industry. It has further identified the smaller units as being wholly independent, even to the point of not being financed by industries having more than 100 employees. In any area of federal timber sales activities, a qualifying small forest industry may request set-asides of timber for their exclusive bidding. The details of such set-asides and bidding arrangements will be developed by SBA and the federal timber-management agencies concerned.

WHILE THE HOUSE APPROPRIATIONS COMMITTEE members are minutely scanning every budgeted item, these experts are at the same time exhibiting a lively interest in new ideas as they relate to forestry. Chief Forester Kenneth B. Pomeroy reported following his appearance before the committee on February 9. Following the forester's testimony, the committee headed by Rep. Don Magnuson (D. Wash.) fired questions at him for a half hour on AFA's recently completed poll of members on small woodlands management needs, and also on forest research. All members of the committee were supplied with copies of the poll. Dr. Ivor D. Fenton (R. Pa.) showed keen interest in insect and disease problems, and inquired about chestnut blight, oak wilt and Dutch elm disease. Rep. Ben R. Jensen (R. Iowa) asked for details on the timber trespass situation in BLM forests, and indicated the committee intended to do something about it.

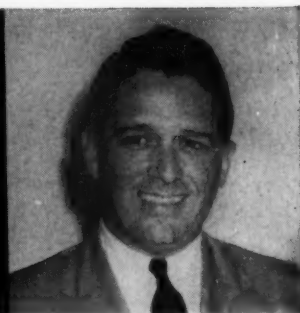
MR. POMEROY TOLD THE COMMITTEE THAT AFA: 1) recommended better fire protection for Alaska; 2) asked control of trespass on BLM forests; 3) approved a 20 per cent increase in timber sale funds for the Forest Service, because each dollar so expended brings back \$10 to the federal treasury; 4) deplored the proposed 14 per cent cut in recreation funds and the 22 per cent cut in funds for structural improvements; 5) asked that a \$726,800 cut in insects and disease control work be restored; 6) asked that research in watershed management, utilization, and insect and disease control be increased; 7) pointed to the desires of AFA woodland owners as expressed in the American Forests opinion poll; 8) asked that research in the effect of chemicals on fish and wildlife be increased to the full Congressional authorization of \$280,000 annually; and 9) recommended that Mission 66 of the Park Service and Operation Outdoors of the Forest Service be carried forward as planned, on schedule and with no cutbacks. At their last board meeting, AFA directors were inclined to believe that both of these programs going full tilt probably represented the barest minimum needs in this growing field.

REP. ROBERT L. F. SIKES (D. FLA.) reminded the Appropriations Committee that Red China has planted 25 million acres to trees in a four-year period, and asked members to restore the half million dollar cut proposed for cooperative tree planting.

(Turn to page 62)

Reading
about

RESOURCES



By MONROE BUSH

A TONIC FOR TIRED BLOOD

THE imperfections of democracy and free enterprise are as commonplace as ugly starlings in a city park. We take them for granted. We grow in our cynicism, and increasingly tolerate solutions to our problems that are neither democratic nor free.

This is the weak way of men who have permitted their faith in democracy to be eroded by difficult times. What a tonic it is, then, to discover a book like **Green Power** by James Stevens (Superior Publishing Company, Seattle. 1958. \$3.00). Here is an answer for the "tired blood" of the American spirit. Here is fresh evidence that democracy can and does work.

Green Power is specifically a history of the timber of the Olympic Peninsula, and of Public Law 273—for long-term contractual relations between the Forest Service and private industry. In a more general sense, however, it is a testament to a free society's ability to help itself.

The problem in this case was the rape and ruin which had damaged the forests and impoverished the communities of the Olympic sawmill area. The rebirth that has come by way of the Shelton Cooperative Sustained Yield Unit is the answer that democracy-in-action supplied.

Former logger James Stevens was closely associated with both the late Senator Charles McNary and the late great forester, W. B. Greeley, fathers of Public Law 273. In writing of these two men, therefore, and of the renaissance which P. L. 273 brought to the Shelton-McCleary-Elma area, Stevens possessed a wealth of personal knowledge. But more than that, he possessed a sharp literary skill, which has produced in **Green Power** one of the best-written resource publications to appear in years.

Under this law, an agreement was reached in late 1946 between the Simpson Logging Company and the Forest Service for the management of an immense tract of timber on a sustained-yield basis for 100 years. Here was the prospect of 100 million board feet of logs a year to support the region, and the first ten years have amply justified initial enthusiasm.

Appropriately, the new door at the entrance to The American Forestry Association's Washington headquarters, featured on the cover of the January issue of **AMERICAN FORESTS**, was furnished by the Simpson Logging Company from Douglasfir cut under the sustained-yield terms of P. L. 273. In a real sense, therefore, this door, like the book **Green Power**, is testimony to the free and profitable cooperation which is possible between government and private industry, for the common good of an entire region.

Stevens has documented the years of preparation and the stubborn leadership that a mutual program of this sort requires. But if a formula could be found for the management of timber by private industry for the long-term public welfare, it should be equally possible to approach other social and economic problems in the same spirit. All that is needed are men like McNary and Greeley, and Stevens himself, who, while recognizing that the free way may not be the easy way, believe nevertheless that it is the best way.

The importance of such a forestry law as P. L. 273 for world forestry in general becomes apparent with a study of **World Timber, Trends and Prospects** by Thorsten Streiffert, Dean of the Royal School of Forestry at Stockholm (Almqvist & Wiksell, Stockholm, 1958). This is the best, most up-to-date survey of

the world's forests and their future that is available. It is a major work. Not only foresters, but economists and diplomats and industrialists will use this book. It is essential reference material for all who are actively concerned with the well-being of the peoples of the earth.

No sentences are more basic to the theme of **World Timber** than those which Streiffert writes on page 13: "It should be possible to estimate that part of the world's consumption of industrial timber which must still be gained from virgin forests as being almost half of the world's total fellings of industrial timber. Consequently quite a considerable part of the world's consumption of industrial timber must be supplied in a way which cannot, in the long run, be maintained."

He goes on to observe: "... the problem regarding world timber supply is, in simplified terms, to adapt the rate of cutting in the remaining virgin forests in such a way that the new forest generation can be ready to provide for the needs of timber before the reserves of the fairly accessible virgin forest tracts have been exhausted."

Unless this second-growth generation is at such a rate as to replace the virgin tracts when they are exhausted, Streiffert sees no other alternative than for world consumption to be forced downward toward the level of the then-existing supply, thus slowing the world's material advance—and obviously adding to our ever-present political problems.

Let us hope that copies of **Green Power** will find their way into these other parts of the world where either virgin forests still exist, or second-growth is coming on. Then, perhaps, in other political and economic contexts, within the framework of strange cultures, the wisdom of co-
(Turn to page 41)



Trail Rider of the Wilderness looking toward Glacier Peak scans the fog, blanketing magnificent timber on valley floor below.

New Wilderness Proposed

THE proposal to establish Glacier Peak Wilderness Area in Washington State was announced last month by the Forest Service. Under this plan, 422,925 acres of the Cascade Mountain Range around Glacier Peak would be preserved as wilderness. It is an area that has been highly regarded for its scenic qualities for several decades.

Northwest Regional Forester J. Herbert Stone, in issuing the Forest Service's new wilderness proposal said, "The Forest Service has made a careful analysis of all resources, uses, and characteristics of the general locality. We have made our best estimate of the long-range requirements of all interested groups. Full consideration has been given to the protection and use of the area, and to coordinating wilderness values with existing and forthcoming developments. Establishment of the Glacier Peak wilderness area is in harmony with the multiple-use concept of national forest management."

Glacier Peak dominates the proposed wilderness area, which straddles the Cascade Divide. It is the fourth highest peak in Washington, and can be seen from many Puget Sound communities. In addition to Glacier Peak, there are over 30

mountains with elevations of 8,000 feet or more, divided almost equally on the east and west sides of the Cascade Divide.

As the name implies, Glacier Peak is capped with glaciers which radiate from the summit in all directions. The most interesting of these is Chocolate Glacier, because it is one of the few "live" glaciers in the country, having advanced about 200 feet each year for the past five years. Nearly all of the higher peaks and ridges in the area cradle ice fields.

Elevations in this region range from 2,000 feet in the lowest valley floor to 10,528 feet at Glacier Peak. Because of the wide variation in elevation and the difference in growing conditions on the east and west sides, there is an unusual contrast of virgin forest types. Douglasfir, western hemlock, and western redcedar grow principally below 3,000 feet on the humid west side. Pacific silver fir, Alaska cedar, and western white pine range from 3,000 to 5,000 feet, and alpine fir, mountain hemlock, and whitebark pine from 5,000 feet to the timberline. On the drier east side, the principal species at the lower elevations are ponderosa pine, Douglasfir, western hemlock, western redcedar, and Pacific silver fir. Al-

pine fir, lodgepole pine, and alpine larch occur near the timberline.

Operable, commercial-sized timber stands occupy 10 per cent of the total acreage included in the Forest Service proposal. This represents about 1.8 billion board feet of timber, with an estimated annual allowable cut of 13 million board feet. Most of this is on the west side of the Cascades. Another 4 per cent of the area has commercial-sized stands that are inoperable because of unstable soil, isolation, or extremely steep slopes.

Approximately 3,200 people visited this area in 1958. With improved access, both roadside and wilderness use will greatly increase, the Forest Service believes. Adequate recreational facilities will be needed along future roads in the corridors. It is estimated that at least 20,000 additional visitors per year will use the White Chuck and Suiattle areas when roads are constructed.

The Forest Service has issued notices that public hearings will be held in October, 1959 before final action is taken on this plan. However, formal establishment of the Glacier Peak Wilderness Area, under regulation U-1, rests with the Secretary of Agriculture.

"Do You Remember When...?"

As this is written, AFA's Dorothy Dixon, or "Dot" as she is affectionately known to 3,000 Trail Riders, is on her way out to Chicago for the annual spring reunion of our Trail Riders of the Wilderness. About 100 riders from all over the United States will congregate at the Congress Hotel again this year, and if events follow the usual pattern there will be two, and only two, principal events. The first will be the best dinner the hotel can provide. The second will consist of sitting up till 4 A.M. or thereabouts looking at colored slides and motion pictures taken by various riders on their pack trips.

They have a wonderful time. Moreover, this marathon showing of slides will be dominated by one expression that will be repeated over and over as the night wears on. The expression is, "Do you remember when . . . ?" meaning "Do you remember when Joe climbed into the sleeping bag head first on the Cascade Crest trip and got stuck?" or "Do you remember when Mary got swept into the current when she hooked that trout on the Maroon Bells trip?"

AFA's Trail Riders, a tightly-knit group, have thousands of "Do you remember when's?" that they exchange in letters the year around and more particularly at the spring reunion as arranged by Mrs. Dixon and Miss Margaret Gausewitz, of Kansas City. During the winter, Miss Gausewitz, or "Maggie" as she is known to the riders, serves as medical technician for Trans-World Airlines. But Trail Rider season finds her on her way as an assistant to various outfitters who conduct the trips. As a result, she has seen a lot of wilderness back country since she first ventured into the Gila in 1939. Not that so much wilderness riding is unique. A number of AFA riders have taken as many as 16 trips and keep coming back for more. In the 26 years AFA has been conducting the trips, 3,000 riders have traversed more than 20,000 wilderness miles in 12 different states on 212 expeditions.

What are the chief conservation concerns of Trail Riders as reported by foresters and packers the last two seasons? Many of these riders are enthusiastic amateur botanists and ornithologists, and they urge AFA to work for more and more research regarding the growing use of insecticides on forest land. "Get the facts and report them," they all say.

Others ask if it is true that wilderness is shrinking. That it is certainly shrinking in the aggregate is, of course, well known to everyone. Who doesn't recall a sylvan boyhood haunt that has disintegrated in recent times? We recall a delightful waterfall in northern New York. Once upon a time you could swim through that falls and sit serenely on a slippery rock behind a curtain

of cascading water. Last time we saw the falls, it wouldn't curtain a chipmunk, much less a skinny boy.

On the managed national forests, it's a different story, we are glad to say. Some have said, of course, that wilderness is shrinking here, too, since the peak year of 1939, but that has never seemed quite fair to us. In 1939, the forests had 14,235,414 acres classified as either roadless, wilderness, wild or primitive. But in 1941, 432,000 of those acres in the High Sierra Primitive Area were transferred to Kings Canyon National Park, which, while not lost to wilderness, were certainly lost to national forests wilderness.

Even so, we find the Forest Service today has *more* wild areas than in 1939—82 now as compared to 75 then—and it adds up to a total of 13,920,448 acres in roadless, wilderness, wild and primitive areas. If you add the High Sierra acreage turned over to the parks, this surpasses the 1939 total. Then too, as far back as 1938, another 260,000 acres in national forests wilderness was given to the Olympic National Park for enlargement. So it would seem the Forest Service has managed to expand its own wilderness areas while adding substantially to the parks at the same time.

AFA contends this is pretty good wilderness stewardship and wonders why the Wilderness Bill is necessary at all. One wonders also if Wilderness Bill advocates, in their enthusiasm, aren't pushing the panic button in the wrong place when they seek to throw a net over national forest wilderness. If they are deeply disturbed over shrinking wilderness, one wonders why they are concentrating on areas that are already being well managed instead of concentrating on the really basic problem which resides in the breeding habits of the American people and which create a growing pressure on *all* land.

Then too, AFA's board doubts the wisdom of any bill that tends to develop a legislative history in the direction of a single use on a perpetual basis. The Wilderness Bill does that very thing despite the fact that wilderness use represents less than one per cent of all recreational use on the forests at a time when overall recreational use development is the crying need of the hour. Moreover, to enact this bill as presently drawn would be regarded as a clear-cut challenge by water, mining, lumbering, grazing, and recreational users in every state in the West. And who could argue, with the whole world in turmoil, that their claim to special legislative privilege is less worthy than that of wilderness?

In setting up the forests, Roosevelt and Pinchot wisely recommended a fair shake for all with special privileges for none. We believe we ought to keep it that way.



West Virginia is reviving the tradition of roasting chestnuts before the fireplace during the fall, winter, and spring months.

A Return to Tradition

By ROBERT R. BOWERS

AT the turn of the century, the American chestnut was as much a part of Christmas time in West Virginia as the Christmas tree. It was as traditional as the stockings over the fireplace, mistletoe, and the stuffed turkey on the dinner table. In fact, few families in the state celebrated Christmas without roasting chestnuts on Christmas Eve, and stuffing the turkey on Christmas day with chestnut dressing.

Old timers speak almost reverently of the fabulous crops of chestnuts which fell early each fall, and were gathered to carry to school as part of their lunch buckets and to carry home to feast upon in the evening. Nostalgia can be seen in the eyes of any man over a half-century old, as he recalls the days of long ago when the chestnut was found in every corner of the state, in every woodlot, on every hillside.

AMERICAN FORESTS

It was in the chestnut woods where the squirrels were found in droves, where the wild turkey feasted and got fat, and the deer, bear, grouse and even quail stored extra weight for the long winter ahead.

The chestnut was the foundation of hunting. More than that, however, it was the foundation of a tradition which has nearly faded from the memory of more than two-thirds of our people.

It happened suddenly. Or perhaps it just seemed sudden. One day the state awoke to find that the chestnut was gone. Towering snags, dead, gaunt, and ghostly-looking, silhouetted every skyline in every woodland, on every hillside. Something had happened, and the people became sad. When a tradition dies, there is always sadness. Except for a few stout-hearted individuals who dream openly and constantly, the tradition of the chestnut would have long since been nothing but a fading memory in West Virginia.

The blight which hit this fabulous

tree came from Asia. It was introduced in New York State around the turn of the century. It was a fungus native to Japan, China and Korea, and was thought to have entered on imported Asiatic chestnut nursery trees. Up until that time, there were no plant quarantine laws, and the disease traveled, swift and deadly, throughout the range through Pennsylvania, Ohio, North Carolina, South Carolina, Tennessee, Virginia, and sections of many other Southeastern and Notheastern states, home range of the native American chestnut.

The infection spread rapidly from its center in New York City and, like a deadly plague, engulfed North, South, East and West, advancing into the Allegheny Mountains and to the Appalachians. The infectious disease was spread by birds, insects, wind and — perhaps the greatest distance—by man transporting infected trees from state to state. Once the blight hit, it was both fast and deadly. Less than fifty years

after the blight fungus was discovered in America, it had reached into every part of its natural range. It is estimated by the Agricultural Research Service that the chestnut trees wiped out by this deadly fungus were equivalent to more than nine million acres of the forest stands of pure chestnut.

This year there was a relative abundance of native American chestnuts—but relative only to the present, and not to the past, because one tree producing a handful of nuts is an abundance today. Today most of the nuts from the American chestnut come from sprouts which, through some miracle, have survived and grown, perhaps for their last year. Chances are that these same trees will be dead next fall.

The blight infections have traveled as far as the American and European chestnut orchards of Washington, Oregon, California and British Columbia. New infections are still occurring in these areas.

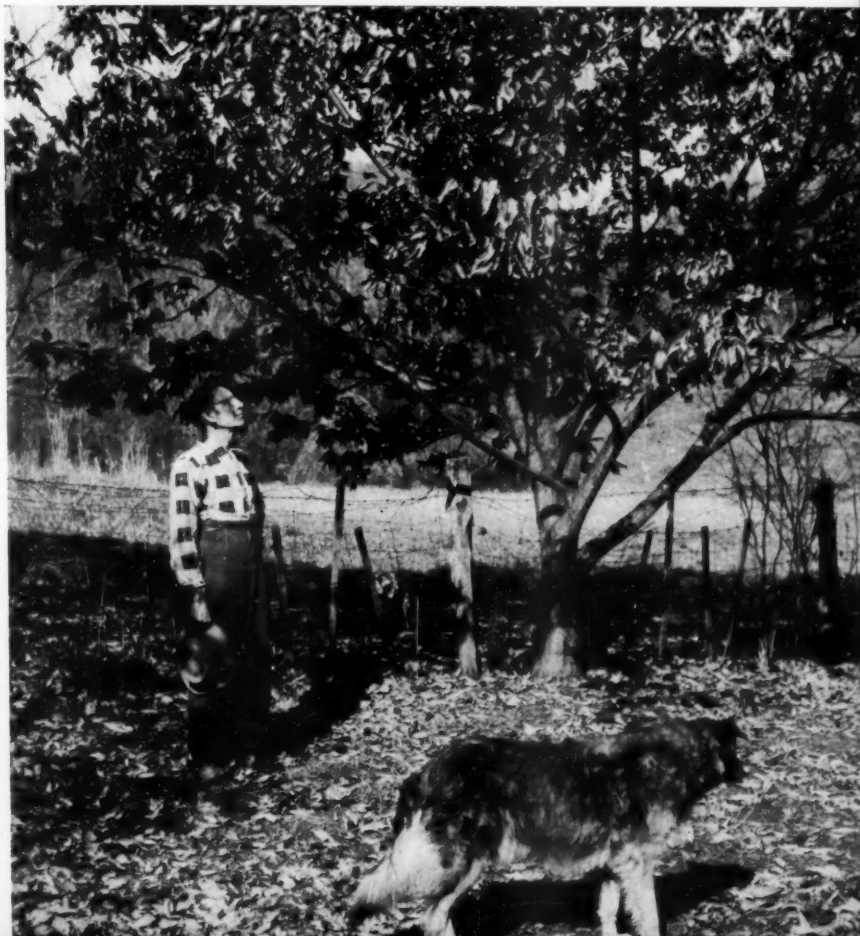
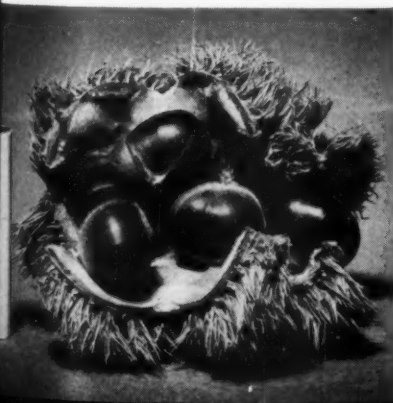
(Turn to page 48)

Jimmy stands beside one of his chestnuts which he also uses for shade trees. Chinese chestnuts are nicely shaped, and their leaves are a lustrous green.



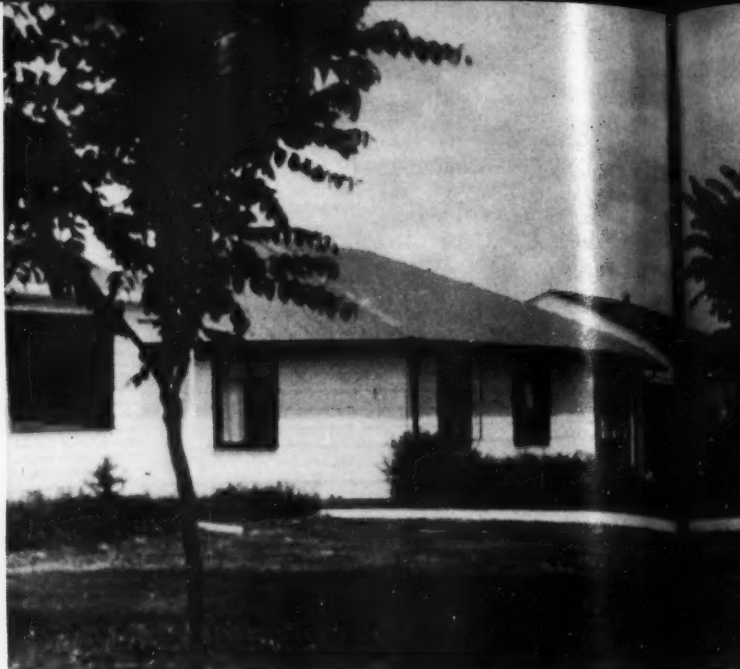
To prevent bursting while being heated the tip should be pared off chestnut

Typical Chinese chestnut cluster from Rexroad's 14-year-old trees at Duffy

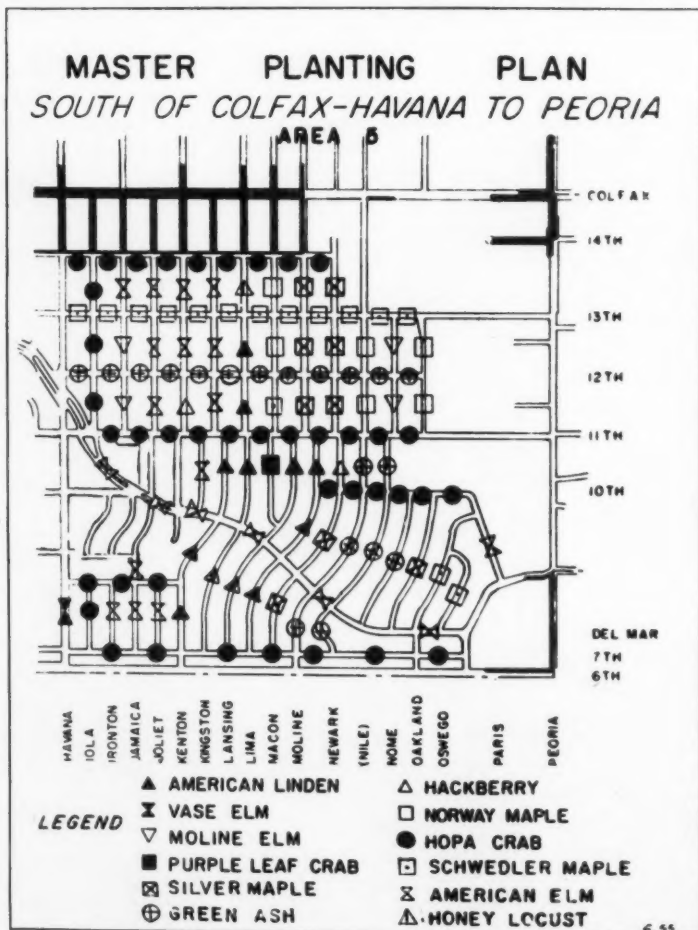




Parks Superintendent Richard Armstrong examines young tree



Master tree charts, indicating the position of various species planted, will serve as guides for future planting, as the city of Aurora expands



12,000 TREES

By FLORENCE K. FRAME

FOR the past four years, every day has been Arbor Day in Aurora, Colorado, and a fabulous 12,000 trees now line practically every street and parkway in the city, giving promise of cooling, eye-soothing shade and ageless beauty.

As you might suspect, this astounding feat didn't just happen. It was the result of diligent and enthusiastic planning and planting. But when you ask any resident of Aurora if the city's new personality is worth it, you'll get an emphatic "I'll say so!" answer.

"When you drive through stripped and naked housing developments as I often do," says an Aurora salesman who travels all over the country, "and you don't see a single tree-shaded spot, you get to appreciate trees more and more. A city with lots of trees makes you feel the people who live there take pride in their town."

Until 1954, Aurora, just east of Denver, looked much like any other Great Plains city. Having tripled its population to 35,000 in ten years, it became known as one of the West's most rapidly growing cities, but its



Trees planted on an Aurora street in 1954, already give promise of benefits to come

TREES AND A CITY

five square miles were fast becoming one of the most barren, as well.

Then, with true tree-loving Arbor Day spirit, members of several civic and service clubs decided to do something about it. The result: an all-out campaign for a city-wide street tree-planting program. The response was instant and overwhelming.

"We started by planting several hundred American elms the length

of one boulevard and flowering crab down another," says Henry Geste-field, who helped get the planting program under way, and still serves as landscape consultant for the city.

Before long, the project had snow-balled beyond volunteer size, and the city stepped in to take over. With an aroused and interested citizenry and a cooperative city government under the leadership of city manager Earl

P. Sandquist and later Mayor Allen Bradley, the project was bound to succeed.

Although Aurorans may not have been aware of it, a recent national survey states that hundreds of newly developing urban areas desperately need more trees. Without them, home owners and prospective property owners will lose a storehouse of benefits in privacy, health, beauty, and protection. It has been proven in city after city that trees provide many vital benefits. They combat air pollution by releasing oxygen into the air and by trapping dust; serve as a protection against the extremes of weather; provide privacy without cutting off light or air; serve as an effective cooling machine in the summer and a buffer against freezing winds in the winter; increase property values (a house on a tree-shaded street in one city brought \$400 more than its twin two blocks away on a treeless street); add beauty and character to a growing city, especially one suffering from bulldozer blight, and pay dividends in renewed civic pride and responsibility.

It will be some years before Aurora can enjoy all these benefits, but its farsighted tree enthusiasts did not let this keep them from making their program a model of careful planning.

"Trees were chosen on the basis of height at full growth, life of the species, resistance to disease and amount of care needed," said Richard Armstrong, present Parks Department superintendent. "A single species was planted to run a considerable distance, for the pleasing future effect. But to avoid monotony and to keep entire sections from becoming treeless because of a disease or

(Turn to page 42)

When seedlings are brought from the city's nursery they are retained in peat moss beds until needed for the planting operation. Careful handling saves considerable expense





This dam is one of several constructed on the Salem Fork Watershed. Drop inlet structures which handle high water levels can be seen on the right. Hills in background reveal general nature of drainage area.

By GEORGE R. PHILLIPS

Board of Upper Ten Mile Watershed Assn. has planning session at Salem. Below, Salem Reservoir, which holds back flood waters from 530-acre drainage area.



SMALL WATERSHED PROJECTS

How do you
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Extensive land treatment in the Barnitz Creek watershed, Oklahoma, has kept damage to a minimum during heavy storms. The section shown here is part of the creek's system of flood water retarding structures

At top, flood water retarding structure on Six Mile Creek watershed, in the Magazine Soil Conservation District of Arkansas, was completed in October, 1954. Bottom, pine seedlings are planted on a gullied area of Biggs farm, a sediment-producing area in Six Mile Creek watershed

SOME 150 communities across the country are starting on the operations phase of small watershed projects under the Watershed Protection and Flood Prevention Act.

As of January 1, 1959, 139 projects had been approved for federal assistance in the installation of works of improvement, and 17 others had final plans awaiting approval. Altogether, local organizations in 1,035 watersheds in 48 states and territories had applied for federal aid in watershed treatment.

What can these communities expect, five or ten years hence? Will these projects, so hopefully planned, do what they are supposed to do?

A look at similar small watershed projects now nearing completion indicates that they will—if the local people involved make them work.

Over one-half of the 62 "pilot" watershed projects started with funds appropriated in 1953, under the Soil

Conservation Act, are now more than 90 per cent complete. Treatment is nearly completed on 65 of the 163 minor and subwatersheds planned in the 11 major river basins approved for flood prevention work under the Flood Control Act of 1944.

Severe storms in the past two or three years have tested the flood prevention measures in several of these projects. Wherever most of the planned structures had been installed and land treatment was reasonably complete, the projects have worked about as expected. The combination of soil and water conservation practices on the land, and water-retarding structures on the watercourses, tamed runoff waters, and substantially reduced flood damages even in the severest rains.

For example, in the three-state area of Arkansas, Oklahoma, and Texas, watershed protection in effect in the spring of 1957 reduced flood

damages an estimated \$2,162,000. Rainfall in this area during April, May and June averaged 19 inches, an amount to be expected only once in 80 to 100 years. Careful evaluations after the storms indicated that had all tributary watersheds been treated, flooding would have been eliminated on about 6,270,000 acres, or 54 per cent of the flooded area, reducing monetary damages by \$109,320,000, or about 70 per cent.

There were several examples of treated and untreated watersheds side by side in the same local storm area, giving convincing demonstrations of the effectiveness of small watershed treatment.

The following case histories tell the story better than any broad area summary.

Six Mile Creek

Six Mile Creek is a tributary of
(Turn to page 53)



Sign marks boundary of St. Marks

MULTIPLE USE

Wildlife

REFUGE

By CLEVELAND VAN DRESSER



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FEW native Floridians, and only a scant number of the winter visitors from other states, know that the federal government plays an important role in Florida's greatest asset—outdoor recreation. An excellent example is the government-owned St. Marks National Wildlife Refuge, 107,000 acres of land and water lying on the Gulf Coast some twenty miles south of Tallahassee. Here, boating and fishing are primary recreation opportunities offered in a territory once set up strictly as a bird and animal refuge. Here, too, during the hunting season, waterfowl shooting is a favorite occupation of many sportsmen.

Every town proclaims the wonder of its local fishing, water sports, and sunbathing opportunities. Thousands of brochures portray the pano-

rama of Florida's resorts, tourist attractions, and sunshine-blanketed scenery. The state's public parks and forests have been given widespread attention, as have the Everglades National Park and the three great national forests—Apalachicola, Osceola, and Ocala. But much less has been written about the equally important system of wildlife refuges.

The U. S. Department of the Interior's Fish and Wildlife Service directs some 200 wildlife refuges in practically every state in the nation. In Florida, these areas, ranging in size from the huge Loxahatchee Wildlife Refuge in the southern peninsula to the tiny islands on the Gulf and East coasts and along the Keys, fill a dual role in the outdoor recreation picture. They are primarily sanctuaries for wildlife, but some,

like St. Marks, have become important as public recreation areas.

In years past, the Fish and Wildlife Service guarded closely those areas under its jurisdiction. The public was not encouraged to visit the spots, since it was believed that birds and animals would fare better if they were not disturbed by the presence of humans. Recently, however, the rules have been relaxed to some extent. It was reasoned that these areas are paid for from public funds, and therefore should be open to everyone when feasible.

Measures taken to protect wildlife here have paid off with benefits other than those expected. This Gulf Coast wilderness is perhaps best known for its wintering flocks of Canada geese, the largest in Florida. Several years

(Turn to page 46)



This building serves as headquarters at St. Marks National Wildlife Refuge



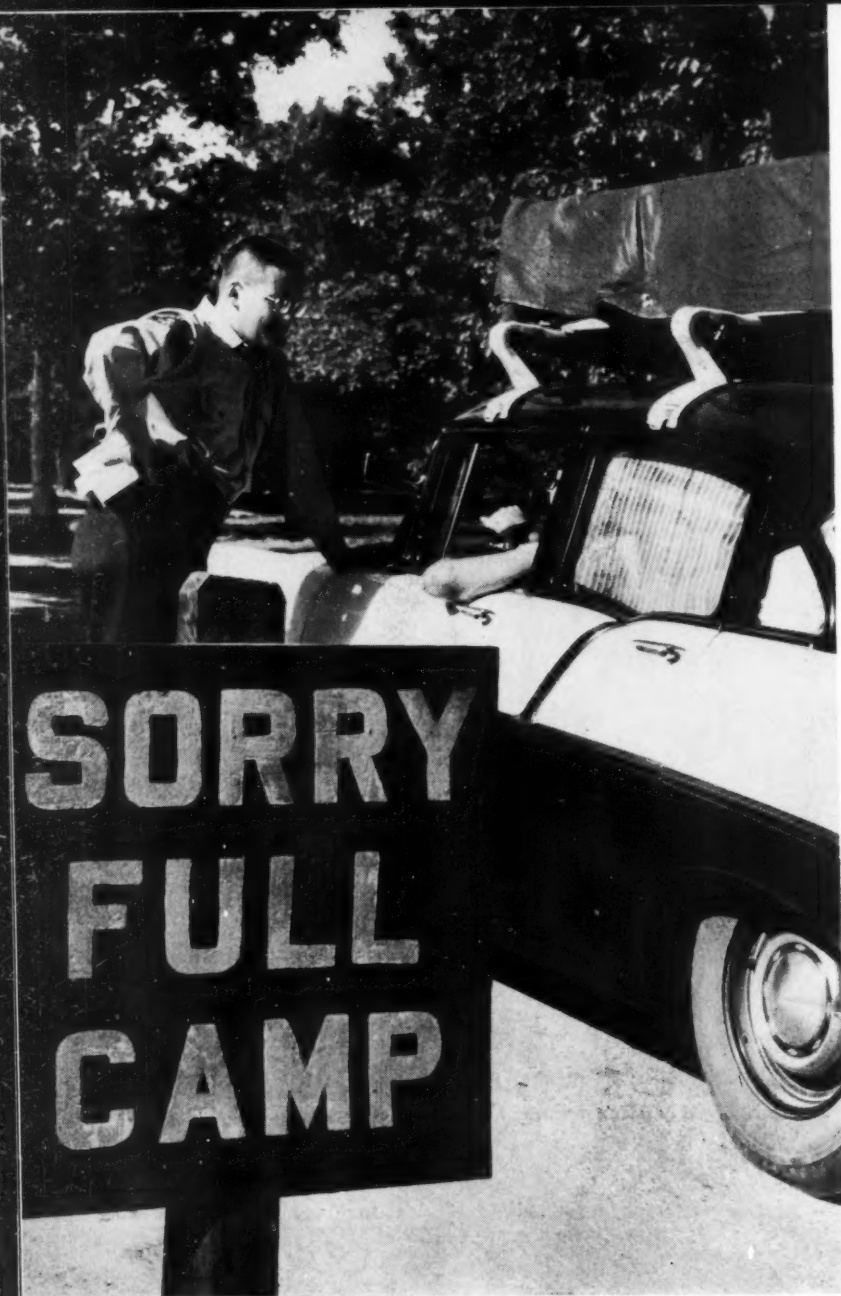
Sailing on St. Marks' pond is popular

A lucky sportsman downs a duck during the St. Marks annual waterfowl shoot



Refuge ponds also offer fine fishing



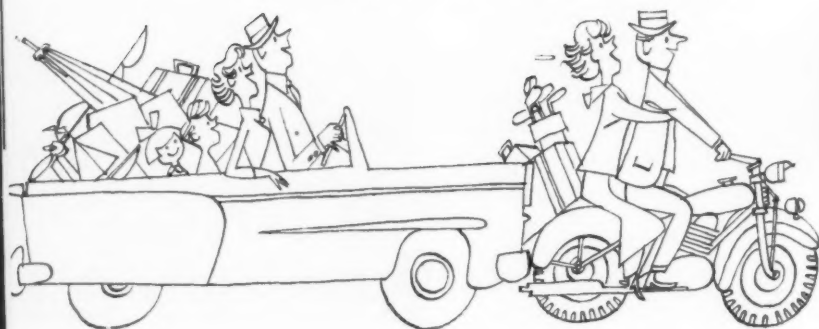


IF you are one of the growing majority of Americans who go outdoors for recreation on annual vacations and on weekends, chances are that your patience has been tried by all those other people who like the same things you do. Having to reserve cabins that you used to just drive to on the spur of the moment; pulling into crowded camp sites where your neighbors' smoke gets into your eyes, their radios into your ears, and their children almost into your laps; perhaps actually being turned away by a "full camp" sign; working reaches of a stream where there seem to be more fishermen than fish; lining up to wait your turn for communing with nature at a once-quiet scenic spot: these are only some of an all-too-familiar set of frustrations.

The chances are, too, that you have met with more of these exasperating circumstances in 1958 than in 1957, more in 1957 than in 1956, and so on. Unless your experience has been very different from the average, this will not have been just because your temper has grown shorter. Recreational use of all kinds of public lands has more than trebled since the end of the war, and is still rising. Despite strenuous efforts, new recreation facilities are not being added nearly so fast.

None of this, of course, is exactly news to the general public, much less to the people who use recreation areas or are responsible for providing and administering them. The growth of outdoor recreation and the attendant squeeze on recreation facilities is just about the most open secret of our time. What is happening is clear enough. The question is: What does it mean? Are we suffering a natural, healthy spell of growing pains, or are we working up to a crisis in outdoor recreation?

The Crisis in



OUTDOOR

To me, the evidence suggests that we are approaching a grade-A crisis, unprecedented in both size and character. In saying this, I am fully aware of the earnest and well-directed efforts that are being made to provide more and better facilities for outdoor recreation. At least two of these—Mission 66 of the National Park Service, and Operation Outdoors of the Forest Service—are on a considerable scale. In addition, there are several other federal programs; numerous state, county and city programs, many of which are well-conceived and well-led; and some very effective work by private groups like The American Forestry Association and the National Recreation Association, and by a handful of large private landholders, chiefly timber companies. All these activities add up to a very large total



National Outdoor Recreation Resources Review Commission members take oath at White House. (From left) Chester S. Wilson, Bernard L. Orell, Joseph W. Penfold, Samuel T. Dana, Mrs. Katharine J. Lee, M. Frederik Smith, Laurance Rockefeller

Bars on the accompanying map indicate the relative area of national parks, national forests, and federal wildlife refuges in the various sections of the country. The map reveals that most of the public land available for recreation forms a far different pattern from that of our population, i.e., most of this land is found in the West where the population is the least. Therefore, most people must travel long distances to visit areas of this kind. They are usually visited as part of vacation travel during the summer months.



NATIONAL PARKS, NATIONAL FORESTS, FEDERAL WILDLIFE REFUGES
THEIR RELATIVE AREA IN 1955

OUR RECREATION

By MARION CLAWSON
Resources for the Future, Inc.



With so many anglers in one stream, the trout probably moved to give them room



Overcrowded campgrounds occur frequently on national parks. Mission 66 is trying to alleviate situation by increasing number of campsites to 25,000



Jones Beach facilities have difficulty accommodating thousands of New Yorkers who flock to shore on hot summer days



Visitors traveling to the state parks for outings find the traffic bumper-to-bumper and recreation areas overflowing



effort. But it is not nearly large enough.

Each year the gap between the active demand and the opportunities for outdoor recreation grows wider, and the gap between potential demand and opportunity wider still. The result is not merely a larger problem, but a quite different problem. As Luther Gulick has recently pointed out, changes in scale can be large enough to change the whole nature of problems or even to create problems where none existed before. He used an example from engineering of the critical speed at which a plane must cease trundling along on its wheels and become airborne.



Damage to park facilities through vandalism adds greatly to maintenance cost

From all signs, outdoor recreation in the United States has reached the take-off point. What up until now has been largely a matter of inconvenience to an increasing number of individuals is turning into a serious national problem that concerns not only the use of many million acres of land but also a large segment of our whole national pattern of life. It is no longer enough just to do more of the same kind of thing we have done in the past.

The situation calls for a fresh look, from a broad viewpoint. That is what gives so much significance to the recent creation of the National Outdoor Recreation Resources Review Commission. Establishment of this distinguished group, under the chairmanship of Laurance Rockefeller, would be a notable action under any circumstances. Coming last fall, by an act of Congress signed by the President, it is an encouraging sign of an awakening nationwide concern, and of a comprehensive new approach to the recreation problem. The commission is directed to survey present needs and opportunities, to look ahead to the prospects for the years 1976 and 2000, and to outline policies and programs for meeting current and future needs. Its report, expected in 1961, could be a landmark.

One of the first great contributions that the commission can make is to chart the present situation more accurately than is now possible. Having recently tried, with the aid of a number of governmental and private authorities on various phases of recreation, to bring together the statistics that are available, I can speak of this at first hand and with some feeling. The result of our effort, recently published by

Resources for the Future as *Statistics on Outdoor Recreation*, though it does present a more complete picture than has heretofore been assembled, is nearly as useful for what it *doesn't* say. The gaps and inconsistencies are rude reminders of the work still to be done before we can really see the current position and try to understand how and why we got there, and where the main trends are leading.

But I believe that enough of the facts are already known to give at least an approximation of the situation the commission will be grappling with, and perhaps a preview of some of the forces and issues involved. The remainder of this article will seek to establish some rough measures of the size of the nation's total problem of outdoor recreation. In a succeeding article I hope to lay out for examination a few of the specific problems, and some of the ways in which they might be resolved.

In our quick survey of the situation and the outlook, let us first remind ourselves of the tremendous importance of outdoor recreation, and how deeply it is imbedded in the American way of life. We are not dealing here with any passing popular fad or with the demands of a fortunate minority, but with a set of continuing forces that will find expression in one way or another. If their direct course is blocked, we may be sure they will find other outlets, with perhaps unexpected and not always pleasant results.

I am not thinking primarily of the strictly commercial importance of outdoor recreation, although that, too, is already great and constantly growing. Here, as with so many aspects of our subject, there is a sad lack of reliable statistics. But there have been some responsible estimates of consumers' expenditures for *all* recreation. The Commerce Department's estimate for 1956 is slightly more than 13 billion dollars. A *Fortune* magazine estimate for the year 1953 was 18 billion; if extended to 1956 the figure probably would be around 20 billion. Apparently between 5 and 8 per cent of all family spending is for recreation. How much of this total is for outdoor recreation is anybody's guess, but such breakdowns as are available for large items like sports equipment and travel suggest a level of at least 4 to 5 billion dollars. In any case, it is perfectly apparent that in many communities recreation has become a leading industry,

Grand Teton National Park has a new 112-trailer-space camp, fringed with evergreens. An additional 100 trailer spaces are now under construction



sometimes *the* leading one, and that the rise of winter sports is making this more and more of a year-round situation.

The main point goes much deeper. We Americans don't just *want* outdoor recreation; we *need* it. Moving from farms to cities and suburbs has not meant turning our backs on land and water and open sky. As a people, we don't feel right unless we can get back from time to time to the out-of-doors. If we should ever lose this urge, there will have been a profound change in the national character. Meanwhile, it is

abundantly clear—even if not subject to statistical proof—that outdoor recreation is not just one alternative use of family income and leisure time that rises and falls automatically with changing costs and fashions. Meeting the demand for such recreation is a national problem of the first rank.

For all these reasons, social and economic, recreation is becoming one of the chief uses of land, along with farming, forestry, and grazing.

To get some idea of the dimensions of the coming crisis in recreation, let us pick as a definite date

the year 2000 which, remote as it may sound, is only 41 years away. Anyone can see that the problem will be much bigger than it is today, if only because there will be about twice as many people. In addition, an even larger proportion of us will be city dwellers who will have to go looking for our outdoor recreation rather than find much of it at home. It is almost certain, too, that we will have more money to spend and more leisure time away from the job. Nevertheless, it is hard to grasp *how much* bigger the demand for outdoor recreation is likely to be. At

Many people carelessly abuse campsites. Dirty camps threaten sanitary conditions and pose fire hazards



City slums are menaces to entire communities. Several agencies, federal, state, and local, are clearing these sites and creating attractive parks



Incessant over-use has a disastrous effect. Here tourists crowd through corridors of ancient cliff dwellings at Mesa Verde National Park, Colo.



first glance, the best figures that can be worked out seem too big to be believed.

I find it hard to grasp, too. So that you can see for yourself, let us go through the essential steps in the best scientific tradition without, however, getting bogged down in too many technicalities.

Any professional economist who wants to look forward nearly always starts out by looking backward. So let us begin by glancing at the record of the past to see what the main trends are and where they are likely to lead.

Consideration will be limited to public land use for recreation purposes, partly because better records are available for such lands, and partly because they are today much more extensively used than private lands for recreational activities other than hunting and fishing. Private lands, however, are a potential recreational asset of great value, and their intelligent use can do much to meet future needs. For example, a recent industry survey showed that some form of recreational activity is carried on on 42,737,567 privately-owned woodland acres, with some

of their programs being outstanding.

As an example of public land use, let us see what has happened in the national parks. (Chief reason for choosing the parks is that they were started first and are devoted wholly to recreation of one kind or another; comparable statistics run back over a longer span. In recent years the national forests have been just as important in the outdoor recreation picture; their story is equally interesting and, in its main outlines, quite similar.) Until 1910, one of the great problems was to make the general public more familiar with the parks, and to encourage them to use the parks then in existence. In no year up to that time had there been a total of as many as 100,000 visits to the whole system.

From 1910 until 1918, there was a more rapid climb in the number of visits, but still nothing sensational; the total at the end of the First World War was under 50,000. But from then on the brakes were off—a million visits in 1920; two million in 1925; three million in 1928; and so on up to last year's figure of about sixty million visits. Moreover, the increases in use come faster and faster. In the 1920's, the increase from year to year was from 100,000 to 300,000; in the 1930's, from 500,000 to one million; and in the late 1940's and 1950's, from one to two million. The more people come to the parks, the greater the increase, it seems.

It is clear in retrospect that the sharp changes in rate were closely connected with the rise of the family automobile as an American institution. Before 1910, there weren't many cars on the roads, and not many roads fit for them to be on. People came to the parks by train and were driven to and from their hotels in horse-drawn stages. Trips around the parks during their stay were also by stage, or on horseback. In any case, the adventurous few who might have reached the parks by car would have had to leave their vehicles at the gates. Automobiles weren't allowed inside, for the good reason that the roads were crooked and narrow and the horses scary. By the beginning of the first war, when it was clear that the horseless carriage was here to stay, the regulations against its entering the parks were rapidly cleared away, and the tempo and pattern of public use of the parks began to change.

One small but troublesome fly in the ointment is the suspicion that never, since the horse and buggy

Inadequate facilities present many health problems



Recreational opportunities on parks and forests should be available to all the people



Outdoor recreation is a problem in both urban and rural areas and the family car travelling on improved highways has accentuated that fact on a national basis





No, not a public park—an industry park in West. More are needed



Dredging Pickwick Lake for fill material to construct approach to the new highway bridge created a harbor which the city of Florence, Alabama has developed into municipal boat harbor



With the future prospect of a shorter work week, and therefore more leisure time, an increasing number of people will be taking advantage of available recreational areas



In densely populated housing developments where no parks or recreational facilities are available several foresighted communities have provided playgrounds for children



days have the statistics on park attendance been quite dependable. In the days when a train journey was required, plus some rather complicated arrangements after reaching a park, it was a safe bet that in the great majority of cases a recorded "visit" meant that one person had been at one park during a year. It was also probable that he had made considerably more than an overnight stay. In recent years, thanks to the mobility that the family car has bestowed upon the vacationing family, we are not nearly so sure what a "visit" means, whether it be to a national park, a national forest, or some other kind of public recreation land.

Nowadays a "visit" can equally well represent any one of a variety of circumstances: A long journey to spend several days at some one place, as in the old times; a half-day of sightseeing as an incidental part of a trip to see distant friends or relatives; one of a number of stops of varying length as part of a tour of half a dozen or so parks, monuments, or forests; one of several trips made each year; and so forth. One of the first things that must be done in dealing with the coming problem of outdoor recreation is to collect better statistics on attendance, and gain a better understanding of what they mean. We need to know much more than we do today about who uses the outdoor recreation lands, where they come from, what they come for, and how long they stay. It already is clear, however, that there are a great many more recorded annual visits than visitors.

My own guess is that the combined total of nearly 120 million visits to national forests and national parks last year represents no more than 12 to 15 million people, and the 200 million visits to state parks between 15 and 25 million.

Whatever the relationship may be, there is no reason to think that it has changed materially over recent years. Therefore, although we cannot measure the intensity of use of recreation lands we can, through the increase in the number of visits, approximate the *increase* in use that has been occurring.

The charts on page 30 give the year-to-year story of increasing use of the national park system, and of two other important kinds of public recreation lands—the national forests and state parks. The climb in attendance has been amazingly persistent and consistent. Although attendance fell off sharply during the Second World War when gasoline, tires, new cars, and many other things were scarce, the war was no sooner over than the upward thrust began again. For both the national parks and the national forests, the long-range trend took up almost exactly where it had left off. The picture is not so clear-cut for the state parks, because pre-war figures aren't detailed or accurate, but obviously something of the same sort happened there, too. In the post-war years, the rate of increase in attendance has been 10 per cent a year in the national forests and state parks, and 8 per cent in the national park system.

Gains in the number of annual

visits to other recreation areas can be shown most quickly in a small but instructive table:

Area	Number of visits in 1958 or last year of record	Percentage rate of annual gain during post-war years
Federal wildlife refuges	8.5 million	12
TVA reservoirs	40 million (1956)	15
Corps of Engineers reservoirs	71 million (1956)	28
Municipal and county parks	Over 1,000 million	4

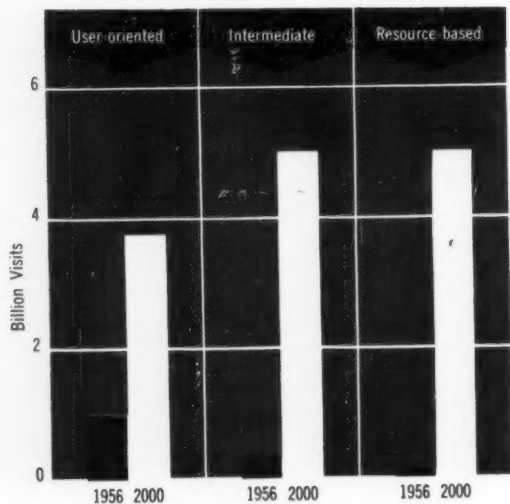
The rates vary, but the direction is everywhere the same—up.

What can these historical trend figures tell us about the future, specifically the year 2000? Literally and directly applied, not much. Simple extension of trend lines, which under some circumstances is sound economic procedure, in this instance give answers that are nonsensical. If, for instance, in the chart that shows visits to national forests from 1924 to 1956, the recent slant of the trend line were extended to the year 2000, an extra-large page would have to be used, for the line would finally come to roost at a point above the present top of the printed page. There are, of course space-saving ways of graphing rises of such steepness. One of them is used here (on page 30) just as an exercise: A semi-logarithmic chart in which the scale becomes progressively smaller as the numbers grow larger, so that the interval between 10 and 100, say, is the same as between 100 and 1,000. This kind of chart, which is used mainly for showing *rates* of increase, tells us

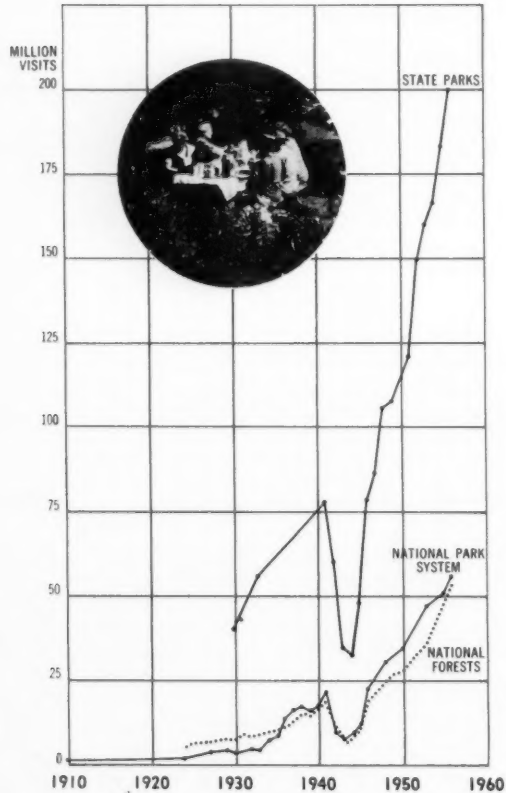
The Department of Recreation and Parks in Los Angeles took an unsightly and dangerous area, photo at left, filled in the site and built a fine playground and community house, shown in photo at right



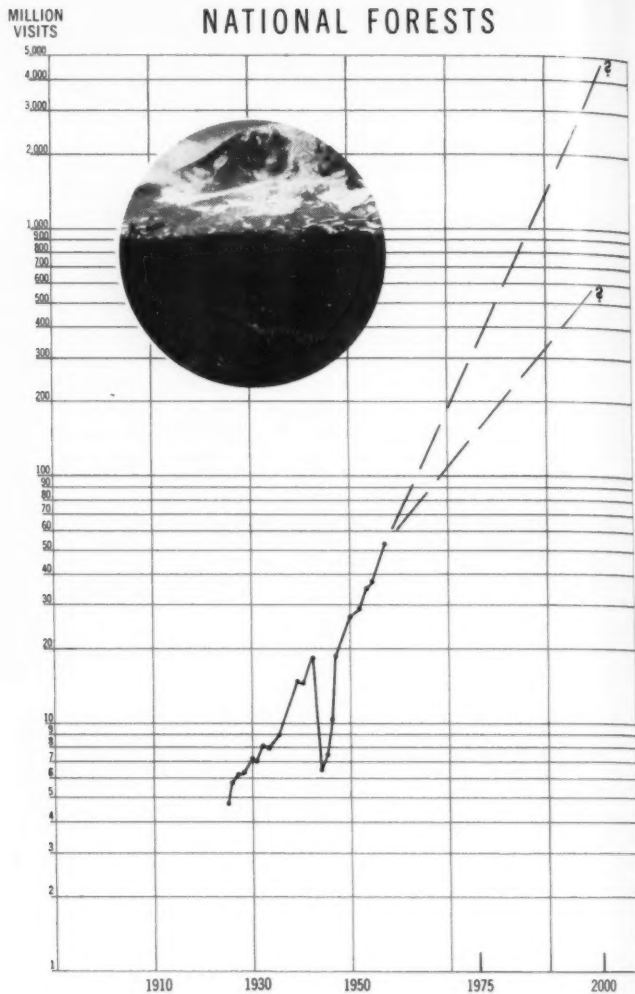
VISITS, BY TYPE OF OUTDOOR RECREATION AREA, 1956 AND 2000



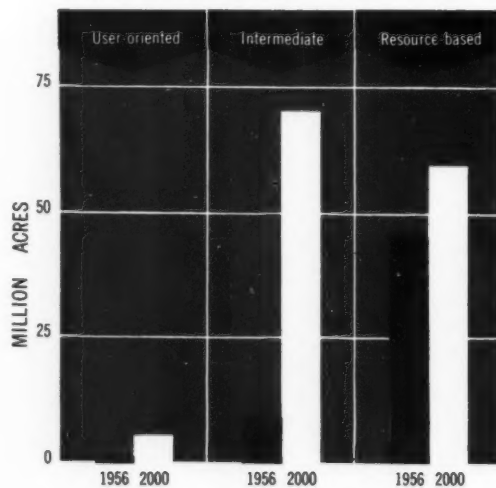
TOTAL VISITS TO STATE PARKS 1930-1956, TO NATIONAL PARK SYSTEM 1910-1956, AND TO NATIONAL FORESTS 1924-1956



NATIONAL FORESTS



ACREAGE IN OUTDOOR RECREATION AREAS, BY TYPE, IN 1956 AND ADEQUATE ACREAGE FOR 2000



AMERICAN FORESTS

GOVERNMENT AGENCIES AND FUNCTIONS RELATING TO OUTDOOR RECREATION AREAS

GOVERNMENT BRANCH OR AGENCY GENERAL FUNCTIONS

FEDERAL GOVERNMENT (one)

Congress	Passes laws, makes appropriations, investigates
President	General direction of Executive Branch
Department of Agriculture	Directs agricultural and forestry programs
Forest Service	Manages national forests
Department of the Interior	Directs various resource programs
National Park Service	Manages national park system
Fish and Wildlife Service	Manages federal wildlife areas
Bureau of Land Management	Manages grazing districts and public domain
Bureau of Reclamation	Builds and operates reservoirs
Department of the Army	Has certain civil works responsibilities
Corps of Engineers	Plans and builds flood control and navigation projects

STATE GOVERNMENTS (49)

(Situation differs greatly among states; common situation described here.)

Legislature	Passes laws, makes appropriations, investigates
Governor	General supervision over Executive Branch
Park Board* or Department	Manages state park system
Forestry Board* or Department	Manages state forests
Wildlife Board* or Department	Manages state wildlife refuges
State Highway Department	Manages waysides and other areas along highways

*may be an agency independent of the governor

COUNTIES (about 3,000—most do not have specialized recreation agencies)

Usually have some general governing group, often called commissioners
May have park and/or recreation departments or officers, to manage parks (if any) and to direct activities on playgrounds or other outdoor areas
May manage school systems, including use of playgrounds for general recreation

CITIES (over 4,000 with 2,500 or more population—more than half have specialized recreation agencies)

Generally have mayor, city council, and sometimes appointed general manager
Like counties, may have park departments or officers, recreation directors, and school administration, each of which is concerned with management of particular outdoor recreation areas

where a yearly 10 per cent increase in the number of visits to the national forests would lead by the year 2000. The answer would be 3.4 billion. It's all very simple: a 10 per cent annual increase means a doubling every seven years. Just start with 60 million in 1958, and keep going. The result would mean an average of 12 visits a year to the national forests by each man, woman, and child in the country, assuming a population of around 310 million. Unless everyone stopped working, this would not leave much time for the additional recreational traveling that would have to be done to all the other areas, including an average of more than forty visits a year to state parks.

Clearly this won't do; our careful calculations have only led down the same blind alley that sometimes

tempts playful statisticians to "prove" by trend lines that some fast-growing town will in a certain number of years have more people than the whole state, and in a certain number of added years, than the entire country. But let us not throw out the baby with the bath; the historical figures, and the current trends that they indicate, are full of meaning that can be ignored only at our own risk. Use of our great public recreation areas has *actually* been, and still is, increasing at rates of 8 and 10 per cent and more a year. The pace will slacken some day, but nobody knows when, or how much. The sober statistical evidence points to a snowballing demand for outdoor recreation beyond anything we have yet experienced.

As for establishing at least a rough measure of the potential demand for

outdoor recreation over the next four decades, a more roundabout method than extending trend lines seems to be more trustworthy. Let us examine the four factors that appear to be the main components of total demand.

1. *Population.* There will be about twice as many people in the United States in the year 2000 as there were in 1950. This is, of course, not a flat prediction; projecting future birth rates is a tricky business, and experts in the business have been very cagey since nearly all of them were caught flat-footed by the upsurge in births during and after the last war. On the other hand, the prospect of a doubled population is much more than an educated guess. The figure already has risen from 151 million in 1950 to 175 million in 1958. Many of the people who will make up the population in the year 2000 already have been born, and the stork still is working overtime. It is reasonable to expect a national population of 240 million in 1980 and 310 million in 2000. We know, too, that an even larger proportion of the future population will be city people who will have to look to specialized areas for getting outdoors.

2. *Buying power.* People will have more money to spend—perhaps twice as much per person in 2000 as in 1950. This will greatly stimulate use of recreation areas, especially when admission is free or at nominal rates. Vacation travel costs are a large consideration here; so are costs of equipment for camping, hunting, fishing, boating, etc. Income after taxes averaged about \$1,600 per person in 1956. A reasonable estimate for the year 2000 is in the neighborhood of \$3,600.

3. *Leisure.* People will have more time for outdoor recreation. The average number of hours worked per week has been dropping steadily, from around 70 in 1850 to around 40 in 1950. Part of the reduction has come through shorter working days, part through shorter working weeks, part through more general adoption of paid vacations. The 8-hour day, 5-day week is by now nearly standard, and its relation to the great rise in all kinds of outdoor recreation is obvious. The future prospect is for still shorter working days and weeks, and for longer and more widespread paid vacations. A reasonable estimate for the year 2000 may well be an average work week of about 28 hours.

4. *Mobility.* People will travel

(Turn to page 40)



TD-24'S TURN WITH BOTH TRACKS PULLING, beat mountain slopes too steep for other power!

Here's what Ladew Timber Co., Orick, California, has proved about Planet Power-steered International TD-24 crawlers—logging some of the roughest, toughest mountain terrain in western woods.

Ladew partner, Louis Headrick, reports: "The ability of TD-24 tractors to turn with both tracks pulling has contributed greatly to our logging operation.

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"Our TD-24's have punched haul roads up mountains impossible for any other equipment. On fairly good terrain, TD-24's build roads faster, and at a cost per mile way below any other equipment we have tried."

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Prove to yourself the positive load control you command, uphill or down, with the Planet Power-steered TD-24. See how "24's" handle the same big loads on turns or straightaways. See your International Construction Equipment Distributor for a demonstration.

Because they have full-time power-on-both-tracks steering, "24's" pull big loads of logs over steep haul-roads that have "hairpin" switch-backs. This outfit, owned by Ladew Timber Co., was logging 100 mbf of Douglas fir daily in extreme mountain conditions.



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Marble figure of Christ stands above Children's Pool. Long leaves of the pandanus tree (upper left) are split and presented to people attending churches on Palm Sunday

Botanists believe that this small spiny bush was fashioned into a crown and placed on Christ's head by his tormentors during the trial. Specimen came from the Holy Land



A LONG a quiet side street in the city of Coral Gables, about seven miles from downtown Miami, you will see a beautiful walled garden. Walled gardens are fairly numerous in Coral Gables and Miami, but the trees, shrubs and vines visible over these native stone walls seem to be strangely different, and they are.

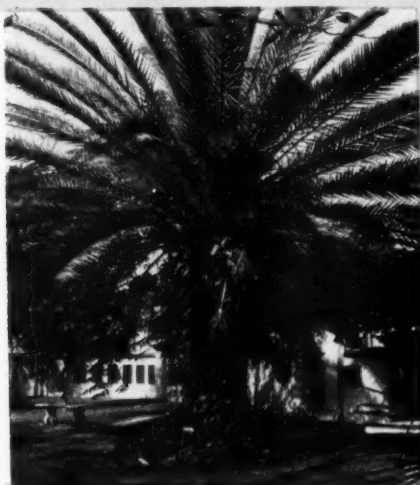
For this is "The Garden of Our Lord," a non-sectarian and free sanctuary of peace and inspiration maintained by the Garden of Our Lord Association on a sizable plot next to the St. James Lutheran Church of Coral Gables. To it within the past eight years have been brought cuttings and seeds of many of the interesting trees, plants, vines and shrubs native to the Holy Land, or otherwise mentioned or alluded to in the Bible.

Because southern Florida enjoys a



At Garden's entrance on corner of East Ponce de Leon and Phoenetia Avenue, in Coral Gables, a wooden cross bears inscription, in Latin, Hebrew, and Greek, "Jesus of Nazareth, King of the Jews"

Date palm was most useful of Biblical trees, providing fibers for rope, baskets, and mats, and fruit which was consumed by man and beast. The date palm once abundant in Judea is now rare



mild, sub-tropical climate, somewhat like that of the Near East, most of the newcomers have flourished. Walk through the arched gateway of the Garden and suddenly you are in another world. Somehow it is a vaguely familiar world, suggestive of scenes in the colored cards and booklets given out in Sunday school each year around Easter time.

For instance, here are spreading date palms and olive trees, fig trees and pomegranates. A balm of Gilead towers overhead, and beside a shaded pool nod the same bulrushes in which the infant Moses was hidden along the Nile. Frankincense and myrrh recall the gifts brought to the infant Jesus by the wise men of the East. An apple tree and a fig tree remind us of Adam and Eve in another garden called Eden.

Only camels, donkeys, shepherds

and Bedouins are lacking to complete the illusion that this is a miraculously transplanted bit of the Holy Land. Although Coral Gables is as flat as the proverbial pancake, a little landscaped hill has been built of coral rock and soil at the south end of the enclosure. Atop this "hanging garden" rises an inspiring marble figure of Christ, his arm upraised in benediction. The effect of height is furthered by a bowered grotto at the statue's feet, with a Children's Pool where tropical fish swim among flowering lotus.

For the Bible student this is indeed a place of nostalgic thrills and happy recognition. The botanist will delight in seeing "in person" many trees, shrubs, and flowers long familiar by name, but not found in most arboretums or other collections of exotics.

But you do not have to be a thorough Bible student or a scientist to enjoy a visit to the Garden. For the benefit of those who are not experts, the Garden Association has thoughtfully provided for each tree and plant group a neat label giving not only its common name, but also references to it in the Bible. For example: "Myrrh. Ex. 30:23. Prov. 7:17. Esth. 2:12."

In addition, visitors are provided with a free leaflet, "A Visit to the Garden of Our Lord," to orient their tour of the grounds, and to recall events in Biblical history.

Let us set out over the winding pathways of this unique sanctuary, leaflet in hand, and savor the arboreal and botanical setting of a far-away region that gave the world several of its most important religions, including Christianity, Judaism, and Mohammedanism.

A magnificent almond tree, similar to the one Solomon described as "flourishing," throws its sheltering arms over the entrance to the garden. Under it, on fair Sabbaths, meets a Sunday school class from St. James Lutheran Church. In midwinter the almond suddenly sheds its seed pods and large leaves, sometimes within a single day. This happened once on a Sunday, right on top of the Sunday school class, with children scurrying in all directions from the pelting of this somewhat overweight "manna from heaven."

Just beyond, from a thick, rugged trunk, spread the long fronds of a graceful date palm, that most frequently mentioned and by far most useful of Holy Land trees. Its dates not only provided food for man and beast, but the fibers of its leaves

"The Garden of Our Lord"

By E. JOHN LONG

could be woven into mats, baskets, and ropes. The Jews considered the palm leaf a token of victory and peace, and John 12:13 describes Christ's triumphant entry into Jerusalem on Palm Sunday: "They took branches of palm trees, and went forth to meet him."

Yet strangely enough, the date palm, once so abundant in Judea, now is comparatively rare there, and, oddly too, while date palms are fairly numerous in Florida, it is the split leaf of the pandanus, or screw pine, that is generally given in church to Palm Sunday worshippers. Neither the date palms of this Garden nor any others in Florida produce edible dates, the climate being too humid.

Across the path from the palm are two unusual trees, the acacia, with its cinnamon brown bark, and the carob, from whose pods the prodigal son obtained nourishment in the familiar parable. It was in the cool shade of acacia groves that the Israelites were led into the worship of Baal Peor. Acacia wood was used to fashion temple furniture.

Since the days when Eve sewed together the leaves of the fig tree to fashion the first clothing, and the

dove returned to Noah with a silvery olive branch in its beak, the fig and the olive have been rich sources of Biblical metaphor. Both thrive and bear fruit in the Garden. Jesus used the fig as an example of fruitfulness, and it was under the olives of the Garden of Gethsemane that He was betrayed while at prayer. In ancient Palestine the olive was not only a food, but provided the anointing oil used in religious ceremonies.

In the southwest corner of the Garden you will meet three interesting trees, the spikenard, frankincense and myrrh. Oil from the spikenard was used by Mary to anoint Jesus' feet (John 12). It was rare and expensive in Biblical days, being imported from India and the Far East.

Although frankincense and myrrh are frequently mentioned in the Bible, few people today have any idea of their origins, or know why they should be mentioned with gold and other costly gifts of the wise men of the East. "And when they were come into the house, they saw the young child with Mary his mother, and fell down, and worshipped him: and when they had opened their treasures, they presented unto him

gifts; gold, and frankincense and myrrh."

Actually, frankincense is a rather scrawny looking tree with long coarse leaves, of the genus *Boswellia*. Its fragrant resin is obtained by tapping the trunk. This resin, still an important item of commerce, was used in ancient times for embalming and as a fumigant, as well as incense. It does not grow in the Holy Lands, but can be found in southern Arabia, Ethiopia, India and the East Indies.

Myrrh looks more like a bush or a hedge-plant than a tree. Of the genus *Commiphora*, it is low and thorny, but its bark and wood are as fragrant as its resin. As a matter of fact, its resin found more uses than that of frankincense, serving also as an astringent tonic and a cleansing agent. Egyptians burned it in their temples, and the Greeks and Romans esteemed it as a perfume and a medical ingredient.

Sometimes the Garden committee is faced with a problem, such as the "willow." The Holy Land has a stream-side Babylonian willow like ours, but most of the Biblical willow references are to what we call clean-

(Turn to page 51)



Resin of frankincense tree provides incense so frequently mentioned in Bible. Not native to the Holy Lands but grows in Arabia, India, Far East

The Garden, operated as a free, non-sectarian sanctuary of peace and inspiration, is maintained by St. James Lutheran Church, Coral Gables

Forester's Notebook

By KENNETH B. POMEROY

WE have received numerous letters from our members complaining that they cannot buy Forest Conservation Stamps at their local post offices. The Post Office Department has been informed of this situation, and it is doing everything possible to see that the Forest Conservation Stamps, as well as other commemorative issues, are available at all post offices.

Regulations issued by the Postmaster General, Arthur E. Summerfield, require that postmasters at all post offices submit requisitions for each new issue so that supplies will be available at all post offices on the day following the official first day sale.

In the meantime, it is possible to order supplies of the Forest Conservation Stamps at face value from the Philatelic Sales Agency, Post Office Department, Washington 25, D. C. Payment for the stamps by postal money order or certified check must be enclosed in your letter, and postage will be deducted.

We understand that unused supplies of commemorative stamps, if not sold within a reasonable time, are burned to make room for newer issues. This should never happen to the Forest Conservation Stamp. It has been voted the most attractive stamp of the year by the Pittsburgh Collectors Club.

The members of The American Forestry Association had a lot to do with the initial issuance of the Forest Conservation Stamp, and they are pushing its sale as best they can. So ask your postmaster to have the stamp available for sale. If you don't get any action, write the Postmaster General.

Klamath Developments

A number of readers also have inquired about the current status of the Klamath Indian reservation.

On August 23, 1958, the Klamath Termination Act of 1954 was amended to permit sale of 617,000 acres of the Klamath Indian Forest to private purchasers. This acreage consists of eleven blocks of sufficient

size to practice sustained yield forestry, and a number of small, scattered fringe tracts that are being sold independently. The law requires that the purchasers of the eleven large blocks shall manage the lands "as far as practicable according to sustained yield principles so as to furnish a continuous supply of timber."

The amended law also required that all the tribal lands be reappraised. This has been completed. The new estimate places the realization value at \$90,791,123. This figures out to about \$44,000 for each of the 1659 withdrawing tribal members. It does not include cash distributions of assets during the past year, which amounted to more than \$1,000 for each member.

The new estimate is substantially less than the earlier estimate of \$119,758,029. A drop in market prices for ponderosa pine of about 15 per cent and subsequent cash payments to members are partially re-

sponsible for the lower appraised figure.

Meantime the withdrawing Indians (1659) and the members remaining in the Klamath Tribe (474) have agreed upon a division of tribal property. About 145,000 acres will be managed under sustained yield principles for the remaining tribal members by the United States National Bank of Portland, Oregon, acting as a trustee.

The residual tribal estate includes nearly 8,000 acres of marshland and 675 acres of farmland. The remaining 15,000 acres in the Klamath Marsh is to be purchased by the federal government for use as a national wildlife refuge.

About 85,000 acres of tribal lands are not included in the Klamath Indian Forest because they consist mainly of grazing and farmlands. These scattered parcels contain small tracts of timber which are being offered for sale immediately without sustained yield restrictions. Bids have already been received on 25 of these tracts. In all but two instances, Klamath Indians exercised their right to claim the tract by meeting the highest bid. The Secretary of the Interior now is beginning to issue deeds for these Indians.

Meanwhile, Indians in need of money are being permitted to borrow from an Indian Bureau loan fund pending the sale of their property.

Plans also are being formulated for sale of the 11 large sustained yield units. None of the 11 can be sold before April 1, 1959. The offered price may not be less than the realization value as determined by the reappraisal. Prospective purchasers must submit a management plan that is acceptable to the federal government.

If all these units are not sold before April 1, 1961, the United States will purchase the remainder (including the Klamath Marsh) at its appraised value, up to a total of \$90 million. Such federally-purchased forest land would be added to the national forest system.





MASTER

British security forces in Cyprus had to fight enemies on two fronts—the Cypriot terrorists and forest fires

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TERING A MENACE

By CAPTAIN A. G. MURDOCH,
M.B.E., R.A.S.C.

WE lounged against the hot deck rails of the troopship and looked across at Famagusta. The cobalt sea crumbled into foam, and the town stretched, long and low, a yellow and white semicircle round the bay. Churches and mosques reared up, flags fluttered gently, and fishing boats bobbed in the harbor. Behind shimmered a heat haze with a hint of hills in the distance. Journey's end for us.

"Good trip," grinned the purser cheerfully. "Safely here on time, and there's Cyprus for you. You know, some say it's 'The gem of the eastern Mediterranean,' others call it 'A hot dot near Turkey.' Just think, you've got three years to find out all about it!"

As I look back now, the purser's conflicting description seems very apt. Gems of antiquity and semitropical beauty abound in the island, and today's glance at the map shows just how "hot" the island's strategic importance is in relation to NATO and Western interests in the seething and vital oil-rich areas of the Middle East.

Of the many complex problems and the worsening internal strife facing Britain in this once-peaceful island colony, most Americans are well aware. For in proportion to the rising toll of brutal murders by EOKA (Cypriot terrorist group), Cyprus had been pushed into ever larger head-

lines in the world's news. To the British Army, which forms the biggest element of the security forces there, had fallen that most difficult of military roles, the performance of police tasks in a situation often verging on civil war.

This story, however, is not concerned with the international, strategic, or political aspects of the human struggle in Cyprus. It is the story of how the British Army, having suffered a grievous loss, was trained to master one of nature's oldest enemies—the forest fire.

June 16, 1956 was hot and humid, but for the British troops 5,000 feet up in the Paphos Forest of northwest Cyprus it was an exciting day. Operation "Lucky Alphonse" was in full swing, and moving with marked success. Over 2,000 tough, sun-tanned men swarmed up the rocky pine-clad slopes in eager pursuit of "Colonel" George Grivas, the EOKA terrorist leader, and his lieutenants. Already a hurriedly vacated hide-out of the gang had been uncovered, and items of the leader's personal clothing found. The end seemed very near indeed.

As the troops pressed on, however, a sudden burst of smoke was seen in the sky over a valley to the west. Observers back at Operational HQ immediately logged the position as a possible forest fire, and also dis-

(Turn to page 57)



Gen. Bourne inspects fire demonstration

Teamwork keynoted entire fire operation



Security forces, forestry personnel, and men from village participated in fire operation



Infantrymen had task of clearing traces



The Crisis in Outdoor Recreation

(From page 31)

more. In 1900, when steam and electric railroads were the chief forms of transportation (together with the horse, which had not yet himself become a rather expensive form of recreation), the average traveler covered about 500 miles a year. Today, with the airplane and the family automobile, the yearly average has risen to about 5,000 miles. Although part of the growth represents a great increase in commuting, there still is a large gain left over for leisure travel. A reasonable estimate for the year 2000 is an average of about 9,000 miles a year for each traveler. In addition, there will be an increase in mobility due to psychological causes which are impossible to measure, but nonetheless important. As a people we are less and less likely to stay in one place all of our lives. Opportunity for outdoor recreation will increasingly be an inducement for moving and for travel.

All four of these forces are pushing in the same direction, and all reinforce each other. To get some idea of the total effect, we need to multiply rather than to add. Twice as many people, twice as much income per person, 1.5 times as much leisure, and nearly twice as much travel comes out to roughly ten times as much demand for outdoor recreation in the year 2000 as in 1950. The word "roughly" is used advisedly. We don't *know* that the estimates for 2000 will turn out as projected; we don't *know* exactly how they will act upon each other. The total increase in recreational demand might be as small as five times or as great as fifteen times. But a ten-fold increase seems the best single figure. There is another important qualification: The projection we have just made is for *demand* and thus is an index of potentiality rather than a prediction of how much outdoor recreation there actually will be at the start of the next century. The potential will not be realized unless there are more recreation areas and facilities than exist today. The past forty years' growth in outdoor recreation could not have taken place if the areas and facilities of 1956 had been no better than those of 1916.

What would a ten-fold increase in the demand for outdoor recreation mean? There are such great differences in the types of recreation land

and their uses that an estimate merely of total demand does not tell us much. But if we make a very simple breakdown into three categories, the picture begins to grow clearer.

One of these categories we might call *user-oriented* recreation areas, whose most important characteristic is accessibility. Whatever the facilities are — children's playgrounds, tennis courts, golf links, swimming pools, or just green space for strolling and picnicking—they must be located close to the people who use them. Such areas do not have to possess any original beauty or other unique natural qualities. Trees and grass can be grown, playing fields laid out, pools and artificial lakes created, on very ordinary kinds of land. Practically all of the user-oriented classification consists of city and county parks.

At the other extreme are the *resource-based* recreation areas. With them it is the natural qualities that are important; nearness to users counts for little. The people who do happen to live near by may use them as they would use city parks after hours or on weekends, but the great majority come from considerable distances during their vacations. The average visitor to Grand Canyon National Park, for instance, makes his stop there as part of a 3,000-mile round-trip journey. Most of the resource-based areas have been chosen as outstanding examples of natural beauty, whether of mountain, lake, forest, or desert. Others are unique as historical or scientific sites. The principal areas in this category are the national park system and the national forests.

In between the two extremes are some important recreation areas that are best described as *intermediate*. These are relatively easy to get to—no more than a couple of hours driving for most users, and usually less. Scenic beauty and other natural advantages are desirable, but not all-important; the aim is to get the best facilities that are available without sacrifice of accessibility. If necessary, quite ordinary land can be made into attractive and useful intermediate recreation areas. All-day outings are the most common form of use, although some people stay overnight and a few spend whole vacations there. Boating, swimming, hiking, picnicking, and fishing are among

the most common activities. State parks and the reservoir areas of the TVA system and the Corps of Engineers are the principal lands in this category.

There are overlaps, of course, among the three classifications. A few of the larger and wilder state parks spill over into the resource-based category, an occasional county park may be more of an intermediate than user-based variety, and so on. But for the most part the three main categories have quite distinctive qualities of use, size, and degree of artificial improvements.

Now let us try to see what a ten-fold increase in demand for all outdoor recreation might mean for each of the three types of area. The estimates that follow, I should point out in advance, are strictly unofficial. I have worked them out myself on the basis of the figures that are available to anyone, with much painful cogitation on how the statistics and projections might best be interpreted. In recent months I have tried out my conclusions on a number of federal and state specialists in outdoor recreation. Some of these experts, I must confess, have been startled, especially at first, by the size of my estimates, but thus far no one has blown them out of the water. One man with whom I talked recently said that his estimates were quite a bit lower than mine—but then conceded freely that his past calculations of that kind had always turned out to be far too low.

Demand for user-oriented recreation would be likely, I believe, to be four times as large in the year 2000 as in 1950. Larger urban population and more leisure time are the two factors that will make for an increase here. Higher incomes and greater travel will be of little importance; in fact, both might tend to divert seekers of outdoor recreation to places farther from home.

A much greater increase seems likely in the potential demand for intermediate recreation areas—perhaps as much as sixteen times. Rises in average income and annual travel should both tend to stimulate interest in these areas.

The greatest increases in demand are likely to arise for the resource-based recreation lands. Lack of time and money still keeps many families from trips to distant national parks

and forests. With higher family incomes and longer vacations, the potential demand in the year 2000 may well be forty times what it has been in the recent past. If this demand were met, it would result in an annual use of the resource-based areas about two-thirds as great as the astronomical figures we arrived at (and rejected) earlier by extending the present trend lines.

Let me repeat that all of these projections are extremely rough. It is not only that we can't predict the future; there is still much that we don't know about what is going on today. It is safer to think in ranges. Even so, the estimates we have arrived at point rather conclusively to what may well be a coming crisis in outdoor recreation.

The prospects for the future suggest many problems: How much additional land should be acquired for public recreation areas? How much would it cost? How can intelligent use of private facilities alleviate some of the pressure? What can be done to protect recreational values, particularly in wilderness areas, that already are threatened by over-use? These and other issues that will have to be dealt with in one way or another will be examined in a second article next month.

Reading About Resources

(From page 11)

operative agreements between government and private enterprise will take new roots, and the strength of the forests flower under the inspiration of our own Public Law 273.

NEW AND TO NOTE

In the entire resource-conservation field of literature, it seems to me that the most consistently interesting and attractive group of books is the one dealing with the animal kingdom. There is no end to the constant stream of writings and studies of animal lore, and for the most part these books are extraordinarily well done. A new one that is particularly appealing is *Winter-Sleeping Wildlife* by Will Barker (Harper & Bros., 1958. \$3.00).

Writing the foreword, Ernest F. Swift remarks that "This book was written with the wondering youth in mind. And yet it is not written as a child's book. . . . It will invite the adult to return to a more leisurely world, when he had time for more than blinking traffic lights and the jangle of telephone bells. Even the

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professional wildlife conservator is likely to delight in this fresh-eyed look at the fascinating byways of the world he works in."

Coming from one of the foremost of all professional wildlife conservators, this is a resounding recommendation—which my own reading of the book completely confirms. Hibernation is a fascinating subject, but never more so than in this little volume.

The illustrations by Carl Burger are delightful. The range from mammals to mollusks is complete. There is just enough here to tell you what you should know, and not one extraneous word to put you to sleep.

Another interesting, off-beat book for the wakeful reader is **The Building of TVA** by John H. Kyle (Louisiana State University Press, Baton Rouge, 1958, \$7.50). Here is a profusely and handsomely illustrated examination of the actual physical construction of the TVA empire. And these fine pictures give a sense of the vastness of the project which mere words and figures fail to convey. Obviously not of general interest, **The Building of TVA** is for the man whose professional or avocational interests tend toward construction, toward steel and concrete, toward the management of nature

by the science of engineering. In this particular audience the book will find a large and deserved popularity.

And while **The Building of TVA** is concerned with the "developed" Tennessee Valley, another sort of book comes along that is concerned with the undeveloped beauty of western Pennsylvania. This is **Penn's Woods West** by Edwin L. Peterson (University of Pittsburgh Press, 1958, \$15.00). Over 300 superb photographs by Thomas M. Jarrett give this book the distinction of being one of the most eye-appealing publications of the year.

Following the four seasons, Peterson's manuscript moves in a slow, easy, familiar way through the natural wonder of this rich region. His reporting is folksy in the best sense of that word. Nothing that he says is very important in itself, any more than a single brush-stroke on a painter's canvas is important. But the total effect, like a finished painting, is beautiful and emotionally moving.

Penn's Woods West is genuine Americana, important to the naturalist and the regional historian, and wonderfully relaxing inspiration for us all.

12,000 Trees and a City

(From page 17)

epidemic, different kinds are used throughout the city."

Chosen were several species of maple, hackberry, honey locust, crab, linden, and elm, with green ash and red oak for color variations. They were planted according to the blue-printed master plan, all spaced fifty to sixty feet apart, twenty-five feet from alley-ways and thirty-five feet from corner intersections. The city handled the care and watering of its seedlings at first, but then adjacent property owners took over.

"Residents have taken a real interest in the trees we've planted along the streets in front of their homes," said Parks Superintendent Armstrong. "They'll water them and call us if they appear to be diseased or infested with insects."

You can bet your bottom dollar this popular project will never be abandoned. Already, long-term plans have been made, for Aurora's annual increase in population still numbers in the thousands. Even if the city were to cease growing—an unlikely prospect—the actual maintenance of what has already been planted, and occasionally the replacement, would

be a job of no mean proportions.

But with residents looking after the young trees with all the pride and appreciation of a new father, the city has had about ninety per cent survival. Two which didn't make it, however, are described in this letter the Parks Department received.

"The first tree you put in two years ago winter-killed," the letter began. "You replaced it last spring, and it was doing beautifully until a severe wind-storm early in the winter split the trunk near the base. We got some 'dope' from a nursery to seal it from the air, then wrapped the trunk over that to protect it."

"We think it might have made it, but for some reason certain children in the neighborhood appeared to use it to swing on as they went by. In any event, one evening a couple of months ago, we came home to find the tree lying completely flat. There was no further hope of saving it so we removed the broken trunk."

"We certainly wish to express our appreciation in finding that you have replanted for the third time another tree in our front yard."

How did Aurora meet the cost of

its program? Originally it was financed by a city bond issue, but the continued cost is being absorbed within the Parks Department budget. To date, it adds up to only about \$30,000 for the entire four years the program has been in operation.

Whenever a city gets a successful project under way, first thing you know someone wants to extend it. And that is exactly what has happened in Aurora. Civic and service clubs, with the help of landscape consultant Henry Gestefeld, are now beautifying the islands of a major boulevard with evergreens.

And they are discussing other ways to spruce up the city, apparently determined to make it the cleanest, most beautiful garden spot in Colorado.

"Riders Up!" (From page 7)

The next group to leave the pressures of urban life for awhile will meet in Ely, Minnesota in mid-July, and take to canoes for 10 eventful days in the Quetico-Superior Wilderness of the Superior National Forest, Minnesota. This great primitive area, generally considered to be the finest canoe country in the nation, embraces thousands of broad, connecting lakes and tree-studded islands straddling the United States-Canadian border. Bernard A. Carlson, son-in-law of our late outfitter Fred Handberg, will service the expedition, scheduled for July 14 to July 23.

Two parties of Trail Riders will set out from Pinedale, Wyoming, on the mornings of July 14 and August 4, each to spend eleven glorious days in the colorful, historic Wind River Mountains of the Bridger National Forest in Wyoming. Here, midway between Yellowstone National Park and South Pass, early pioneers blazed the overland trail to the Pacific Ocean. This roadless kingdom is guarded by two majestic peaks, Fremont and Gannett, towering more than 13,500 ft. above sea level. Purple daisies, paintbrushes, primroses, and hundreds of other wildflowers grow in luxuriant profusion here, and the sparkling lakes and swift streams offer fine fishing opportunities. Walt Lozier is in charge of the outfitting, and everyone will be pleased with his fine operation.

Bob Davis, of Fort Collins, Colorado, will outfit the Maroon Bells-Snowmass, Colorado expeditions again. These are scheduled for July 24 to August 3, and August 4 to August 14. The beautiful Hotel Colo-

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These four aristocrats of American Flowering Evergreens will give you gorgeous bloom from May through July. Our stock is grown and shipped from the mountains of North Carolina where cold winters make them hardy. Carefully dug and packed. Easy to plant. Like acid soil, moisture and part shade. Never fertilize or cultivate. We ship tens of thousands every year.

Sturdy Plants—12 in. high	per 25	per 100
MAXIMUM, white in July	\$12.00	\$39.50
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MTN. LAUREL, pink-white in June	\$13.50	\$45.00

OLDER—BUSHIER

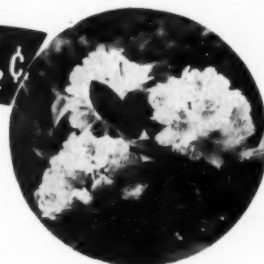
These are bushy 4 to 6 stem plants, 2 years older. Some blooms this year. Balled and burlapped.

20 PLANTS (5 of each variety listed above)	\$31.00
100 PLANTS (25 of each variety listed above)	\$140.00

BIG, BUSHY SPECIMENS

1 1/2 to 2 ft. high. Most are already budded for bloom this year. Balled and burlapped.

YOUR SELECTION of any 5 listed above	\$18.00
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These trees are lusty 6-year-olds. Ideal size for safe shipping, easy planting, quick growing. Hemlock makes the most beautiful of all hedges. Sun or shade. Space 18 inches apart.

100 Hemlocks (12 to 15 inches)	\$ 80.00
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12 to 15 inches high
Twice transplanted
Sturdy—Bushy



REAL BARGAINS IN YOUNG SHADE TREES

We supply thousands to large estates, parks, and municipalities. You can save by buying from us, too. These are nice, well-rooted, transplanted stock, 4 to 10 feet high. Transplant more easily and grow more vigorously than older stock. Yet you save 2 to 4 years over small seedling sizes at little extra cost. 5 of one kind at 10 rate, 50 at 100 rate. Order direct from this advertisement. Pay express (10 to 15% on arrival).

		10 Rate	100 Rate			10 Rate	100 Rate
ACER (Maple)	Rubrum (Red Maple)	4 to 6 ft.	\$15.00	PLATANUS (Amer. Sycamore)	4 to 5 ft.	12.50	95.00
		6 to 8 ft.	30.00		6 to 8 ft.	22.50	175.00
	saccharum (Sugar Maple)	4 to 6 ft.	15.00		8 to 10 ft.	30.00	250.00
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BETULA (Birch)	platanoideis (Norway Maple)	4 to 5 ft.	12.50		4 to 5 ft.	17.00	150.00
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	papyrifera (Paper)	4 to 5 ft.	18.00		4 to 5 ft.	30.00	250.00
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CLADRASTIS (Yellow-wood)		4 to 6 ft.	40.00		4 to 5 ft.	12.50	110.00
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rado in Glenwood Springs will serve as Trail Rider headquarters this year, and the management is giving our riders a special rate. The Maroon Bells-Snowmass trip is in open mountain country, and the Rockies in this area are spectacularly colorful. At the time of our rides, the high mountain meadows are virtual blankets of wildflowers. This trip through the back country of the White River and Gunnison National Forests will skirt many lakes. The Maroon Bells-Snowmass Wilderness lies just under the Continental Divide. Although a bit too high for some forms of wildlife, it has a sizable deer population and some elk.

The Sawtooth Wilderness expedition has long been a favorite with the Trail Riders. Situated in the Sawtooth and Boise National Forests in Idaho, this primitive area is a wild kingdom of serrated mountains, alpine lakes and majestic pines. Its rugged peaks and crags, towering above forests of pine, blend with sparkling blue lakes. Two trips are planned—July 28 to August 7, and August 11 to August 21. This year the Trail Riders will gather at Ketchum, Idaho, a small town which adjoins the famous Sun Valley resort. Here the Wood River Motel has been designated as headquarters. Those who prefer accommodations

at Sun Valley may request reservations there. Again we are fortunate enough to have the cooperation of Ted and Phyllis Williams of the T. P. Ranch, Obsidian, Idaho, in operating the Sawtooth trips. Their performance in packing and guiding our groups is unexcelled anywhere.

Like the hardy pioneers of 100 years ago, the traveler will test his mettle when he joins the first Trail Rider group to explore the magnificent Anaconda-Pintlar Wilderness in the Beaverhead, Bitterroot, and Deerlodge National Forests of Montana. From August 3 to August 12, these modern pioneers will journey in a land distinguished by a chain of precipitous snowcapped peaks, virgin forests, cascading streams, jade green lakes, and mountain meadows fragrant with alpine flora. This is a tremendous country. The region remains in a wild, untouched state because the topography has made it practically inaccessible. Photographers will be enchanted with the scenic beauty, while anglers will be overwhelmed by the fine opportunities. Dean E. O'Leary of Staghorn Ranch, Butte, Montana will be our packer. He comes well recommended. The gathering point for this party will be the Finlen-Western Hotel in Butte. This pioneer expedition will be under the personal guidance of AFA's Chief Forester, better known as the Wagonmaster.

The grandeur of Teton Wilderness in the Teton National Forest, Wyoming, awaits those who select this trip from August 10 to August 21. Here one finds beauty that knows no compromise or limitations, grandeur without the artificial, and solitude—an objective of many people seeking renewed inspiration and energy. This exploratory trip has a special significance for many nature lovers, as it provides a view of the rare trumpeter swans on Bridger Lake. The riders will assemble at the famous Jackson Lake Lodge in Moran, Wyoming, for an unforgettable ride in varied and unique mountain country—a region of high plateaus, lush valleys and mountain meadows; a scenic wonderland, with vast stretches of pine and spruce, open parks and meadows where moose, elk and deer abide. Trout streams and many small lakes provide abundant fishing. Ted Frome, of Afton, Wyoming, will outfit the party.

The pristine beauty of the San Juan Wilderness in the San Juan National Forest, Colorado, will reveal the charm of older, simpler

TRAIL RIDERS OF THE WILDERNESS

1959 Expedition Schedule

HIGH Uintas Wilderness, UTAH

JULY 7 TO JULY 17
\$230 from Vernal, Utah
Party limited to 20

QUETIC-SUPERIOR WILDERNESS, MINNESOTA—(Canoe Trip)

JULY 14 TO JULY 23
\$210 from Ely, Minnesota
Party limited to 17

WIND RIVER MOUNTAINS, BRIDGER WILDERNESS, WYOMING

JULY 14 TO JULY 25; AUGUST 4 TO AUGUST 15
\$250 from Pinedale, Wyoming
Parties limited to 25

MAROON BELLS-SNOWMASS WILDERNESS, COLORADO

JULY 24 TO AUGUST 3; AUGUST 4 TO AUGUST 14
\$230 from Glenwood Springs, Colorado
Parties limited to 20

SAWTOOTH WILDERNESS, IDAHO

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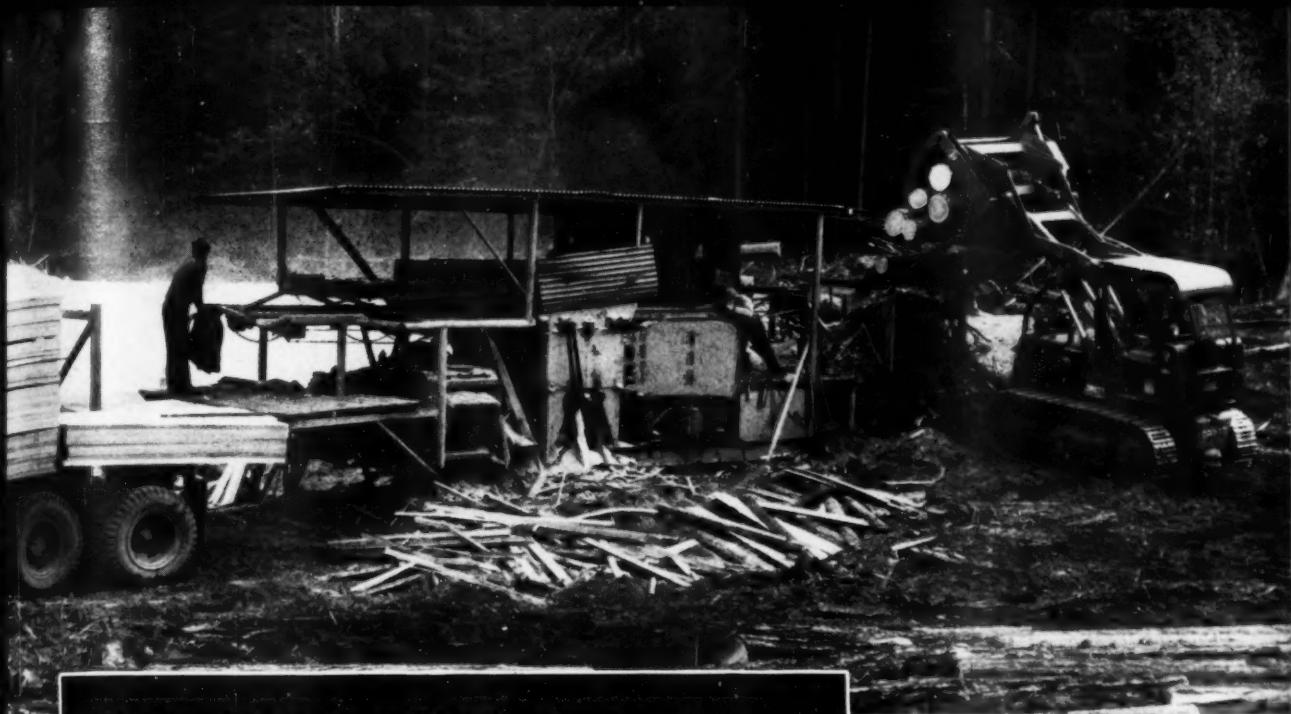
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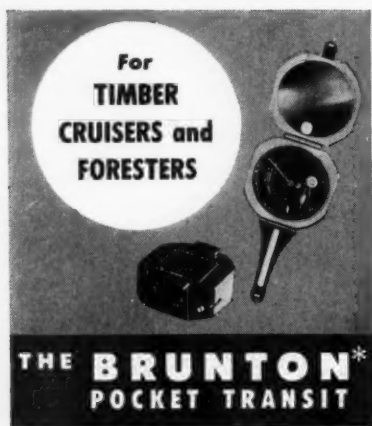


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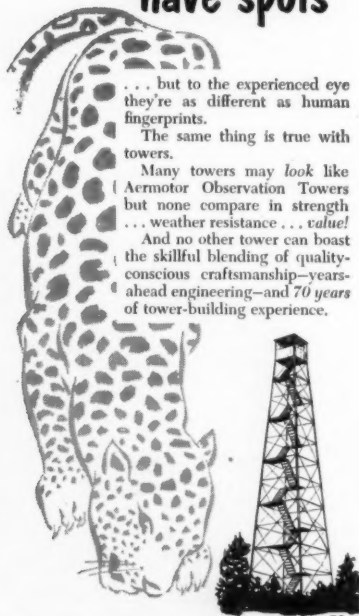
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times to the Trail Riders who elect to ride the high, narrow trails in this magnificent country from August 11 to August 21, and August 24 to September 3. Ancient, lofty mountain ranges, heavily timbered slopes, flower-covered meadows, and beautiful mountain lakes and streams characterize this magnificent region, which is accessible only by trail and pack outfit. Meeting in Durango at the Strater Hotel, which still retains its authentic "Old West" atmosphere, members of the party will then ride the only narrow gauge railroad now in operation. This relic of frontier days often provides "local atmosphere" for movies, such as "Around the World in 80 Days," and "Cattle Queen." After traveling north through the fertile Animas Valley into the narrow Animas Canyon, where horses will be waiting, riders will begin the thrilling ride in this rugged hinterland. The San Juan primitive area is a paradise for mountain climbers, botanists, geologists, and nature lovers. Its numerous streams and lakes abound with trout. There is much wildlife here, including some big game such as bear, elk and deer. The expert outfitting of Joe Hotter and his staff, combined with the beauty of the region, will make this expedition a memorable one indeed.

After an absence of 18 years, The American Forestry Association is pleased to announce the reinstatement of the Gila, New Mexico expedition in the Trail Riders program. This trip, welcomed by regular and new riders alike, marks a return to a romantic and historic region in a remote country of timber and grassland, lonely trails, black winding canyons, and buttes and mountains that reflect astonishing colors in the sun. To the west, the famed Mogollon Mountains bound the desert; to the east is the Black Mountain Plateau, and through its heart courses the Gila, the river of mystery and Pueblo myths. In the

deeper regions are cliff dwellings that stir the imagination. The excellent facilities of the Hotel Val Verde in Socorro, New Mexico have been made available to the riders, and Bob Davis will handle the outfitting for the group. The dates for the Gila expedition are August 25 to September 4.

We are fortunate, also, to include again this season the Mt. Whitney-High Sierra expedition in California. Charles Morgan, son of our former packer Bruce Morgan, will outfit the party, which is scheduled to travel through this interesting and thrilling country August 26 to September 4. Here the wilderness riders will visit famous Cottonwood Lakes, cross historic Army Pass, and climb to the top of Mt. Whitney. This great wilderness, in the Sequoia National Park and the Inyo National Forest, is distinguished by sheer granite cliffs, well-graded trails, mellow green mountains, clear cool streams, and tall trees. Headquarters for the expedition will be the Dow-Villa Hotel in Lone Pine.

The last trip of the season will be taken in the Pecos Wilderness of the Santa Fe and Carson National Forests, New Mexico. This magnificent and unspoiled mountain retreat of some 136,000 acres is the wilderness stronghold of north-central New Mexico. The region, dominated by Truchas Peak, is a dramatic stretch of timberline country. For the most part, the Pecos is a wilderness of sweeping forests and open parks. The streams, while small, are fast and clear, offering excellent fishing. Numerous well-stocked lakes are tucked away in remote corners of the high country—probably the most beautiful in the Southwest. This popular trip, scheduled for September 7 to September 17, will be outfitted by Douglas O'Bannon, Mountain View Ranch, Cowles, New Mexico. The party will gather at the LaPosada Inn in the fascinating city of Santa Fe.

Multiple Use Wildlife Refuge

(From page 21)

ago, the natural supply of food for these geese—plants which grow in the shallow waters of Apalachee Bay—began to run short. The geese had increased in number to a point where they could not find enough food in their natural habitat, and had begun to raid the surrounding farms of peanuts, corn, and whatever else they could find. To stop this, the U. S. Fish and Wildlife Service planted

crops inside the refuge, and built 5,000 acres of fresh-water impoundments to raise aquatic plants as feed for the geese. The investment paid off, as it resulted in a tremendous rise in the game-fish population—a boon to fishermen. Today, several tons of bass and bream are taken annually from the refuge's ponds and canals. In addition to the impoundments, fishing enthusiasts use parts

of the St. Marks and Wakulla Rivers and the waters of Apalachee Bay.

In the meantime, farmers realized they could rent their fields for goose shooting. There has been no objection from farmers about goose damage to their crops for the past ten years. As a matter of fact, many farmers in the St. Marks area make more money directly and indirectly from the wintering geese than they do raising peanuts and corn.

The pine woods and grassy fields of St. Marks Refuge support countless numbers of wild turkey, quail, black bear, white-tailed deer, gray, cat and fox squirrels, and scores of different species of songbirds. Wild hogs are so numerous that they have been termed a nuisance, and 175 miles of fences have been constructed to keep them under control. Alligators glide through the sloughs, and occasionally panthers and wildcats are seen. The shore line and beaches attract myriads of water birds, including white pelicans, egrets, herons, cormorants, anhingas, plovers, willets, sandpipers, and marsh hens.

The peace and quiet of the fields of St. Marks hides the area's turbulent history. This section of Florida is mentioned in history books as early as 1527, when the Spaniard De Nevarez arrived with a company of 300 fighting men from Tampa Bay to set up headquarters along the Wakulla River. He built and launched the first ships ever constructed in territory now owned by the United States. From here he sailed into the Gulf of Mexico. Twelve years later, in 1539, Hernando De Soto arrived. And from then until 1821, when Florida was obtained from Spain, the St. Marks area passed from hand to hand, with the English, Spaniards, Indians, and freebooters battling one another for control. For about 275 years, forts were built, raiding parties scoured the countryside, and hunting parties fought with Indians. The brief intervals of peace were anything but serene. Nature played its part, too, for in 1758 a hurricane flooded the Spanish fort, San Marcos.

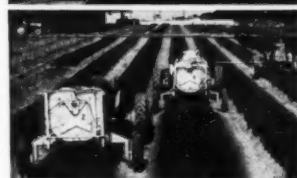
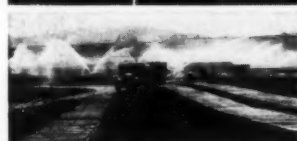
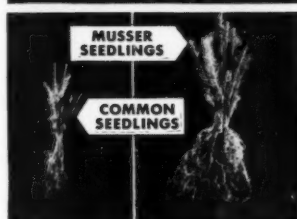
Prior to the War Between the States, when Confederates occupied Fort St. Marks and Union forces blockaded the mouth of the river, the first railroad in Florida was built from Tallahassee to Port Leon, passing through St. Marks. One of the most romantic episodes in the history of the refuge took place between 1781 and 1789, when William Augustus Bowles, a disgraced British officer, proclaimed himself "King of Florida." He was captured by the Span-

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iards, but he escaped, set up headquarters on the St. Marks River, and became a pirate. When peace had settled over the area, a lighthouse was built at the mouth of the river in 1831. Built of stones from the old fort of San Marcos, the structure is still in use.

Today's tranquil scenes of the government-owned refuge belie the area's part in the political turmoil of three centuries. Anglers dip their lines into the quiet ponds and rivers. Small boats cruise the waterways and impoundments. Campers stroll about their tents in the shaded woods. Photographers silently record the secrets of nature.

The refuge has been managed for the past thirteen years by Paul Krea-

ger, wildlife expert of the U. S. Fish and Wildlife Service. Aside from the natural attractions for fishermen, hunters, and campers, the efforts of Mr. Kreaeger and his men have made the area a paradise for all forms of wildlife indigenous to northwest Florida.

Altogether, the St. Marks Wildlife Refuge presents as complete a picture of the Florida outdoors and its wild inhabitants as can be found anywhere in the peninsula. It is fortunate for sportsmen that Uncle Sam has seen fit to develop it as a wildlife sanctuary and, incidentally, to preserve a spot where nature lovers can relax and pursue their favorite recreational pastimes.

A Return to Tradition

(From page 15)

When the chestnut disappeared it lost its significance upon the American scene; and what was true in America was doubly true in West Virginia. West Virginia today is an oak state in which one-half of the timber land is in some species of oak. At the turn of the century, perhaps about one quarter of the timber was thought to be chestnut. Fortunately, because of a few individuals like Mark Fitzpatrick of Vadis, and Jimmy Rexroad of Duffy, the state is slowly but surely on the road back to her once-famous Christmas tradition.

There is no way of estimating how many chestnuts will be on the markets in the state this year, but chestnuts are growing abundantly across the land and more are being planted every year. They are not the American variety, but they are chestnuts which, in most cases, are just as sweet and meaty and edible as those known in the days of the native tree. The primary tree involved in this rehabilitation of our chestnut lands is the Chinese chestnut, a blight-resistant species which apparently can live in proximity to the old infections, survive, and produce nuts.

This year, Jimmy Rexroad of Duffy has 35,000 Chinese chestnut seedlings, which he is sending out across the state to people who are interested in carrying on this tradition. Jimmy is past 70 years old. He is of solid stock, fine convictions and deep emotion when it comes to his native state. Here is a man who, perhaps, may never live to see West Virginia reach the full potential in chestnut orchards that he knew as a small boy. Yet he plants more trees every

year, making a distribution comparable to what is being contributed by state and federal agencies.

Jimmy explains his thinking in a manner which imparts his deepest feelings in a most heartfelt way. Said Jimmy, on my recent visit to Duffy, "When I was a small boy there was no greater thrill than to arise early in the fall of the year and race the turkeys to the chestnut trees to gather the nuts which had fallen during the night. I usually left in such a hurry that all I took to gather the nuts in were my pockets. I usually returned with all my pockets bulging. After the blight, all that remained was the memory of the trees that bore the largest nuts. Little did I think a few years back that the time would come in my life again when I could go to the chestnut trees and fill my pockets as I once had. But," Jimmy added, "the time has come. I now have all the chestnuts I need. I am interested only in those who don't have any." Jimmy said, "My plantings will some day provide something for little boys to fill their pockets with for generations to come. My trees will live 100 years and in that time, perhaps, they will reproduce their own kind over and over again."

Jimmy has a 500-acre farm on the border of Lewis and Upshur counties. He has a chestnut orchard, but his favorites are two 14-year-old trees which serve as shade trees in his back yard. This fall, from these two trees, he gathered 18 gallons of Chinese chestnuts, something in the neighborhood of 100 pounds. Jimmy believes that every man who is a native of the state should have a deep feel-

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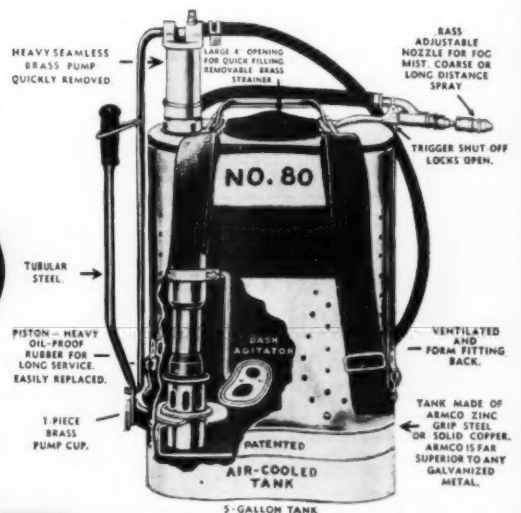


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ing about returning the chestnut in West Virginia to its former status. He believes it so strongly that he is doing just that himself. In fact, he is probably the source of as many chestnut plantations in West Virginia as any other individual or agency.

Jimmy believes that the better the soil, the better grows the tree, and the quicker it will come into bearing. Those planting chestnut trees should find out the quality of the parent tree, if possible, he says. In this regard, Jimmy knows of what he speaks. He has planted all kinds of nuts in all soils under all conditions. He knows first hand the quality of the product and what it demands. Because of the relatively few people in this world who have taken the time to experiment in bringing back the chestnut, Jimmy himself is perhaps one of the state's best authorities on the subject. As he said, "Some chestnuts are sweet and as tasty, or even tastier, than the native American nut. Some, however, the large horse chestnuts, could be better compared in taste to acorns in the fall."

Jimmy Rexroad believes that it would be a fine tribute to a fond memory if every lawn had as its shade tree this new version of an old tradition, a Chinese chestnut. The foliage of this tree is beautiful. It is deep green, and grows like a red or sugar maple in the open. It is not a big tree, but it is a beautiful one.

Because so many people have heard about him and about the project which he has taken upon himself, orders have come to Jimmy for his home-grown plants nationally. He began growing trees in 1952, and has planted them each year since. He has shipped to all parts of West Virginia—from Wardensville to Hunt-

ington, from Hancock to Bluefield—but the largest shipment was to Las Cruces, New Mexico, where a former West Virginian wanted to try out his chestnuts.

"As we gather our chestnuts each fall," Jimmy said, "we pack them in damp sand and put them in the cellar where it is cool." Jimmy plants his nuts as soon as the weather permits in the spring. He ships his trees out by mail each spring to friends and admirers who order them during the winter and the fall. He says that these Chinese chestnut trees will grow anywhere an apple tree would grow, and he plants them just about the same way a farmer would plant an apple orchard.

During my visit to Duffy, it was obvious that Jimmy had enough trees to supply the needs of several hundred West Virginia orchardists. He had trees available for distribution ranging in age from one to four years. The four-year-old trees are from four to five feet high and are somewhat large to ship by mail. The one, two and three-year-olds are ideal size for transplanting, and should be bearing nuts at the age of six or seven years, and each year thereafter, according to Jimmy.

I asked him what he charged for his chestnut trees, and his prices seemed extremely reasonable. He sells the one-year-olds for 50 cents, the two-year-olds for 75 cents, and the three-year-olds for \$1.00. He had no price on the four-year-olds at that time, simply because they were too large to mail out. He does not grow these trees for commercial purposes, but rather he feels that anyone who is sincerely interested should have them. There are many people, however, who will take such prizes when they are free and allow them to spoil or waste. Since nearly all Chinese chestnuts are so valuable they are used for seed, no waste can be afforded.

Fifty cents is about one-half the commercial nursery price, according to the catalogs, and it is about one-third the price in many areas.

Some day West Virginia may again have chestnuts on every farm and, perhaps, in the yard of every home. "What a wonderful thing it would be," said Jimmy, "if all of our sons in West Virginia could do as we have done in years gone by." By that he meant that every boy should one day be able to, as he did, race the turkeys to the chestnuts each morning, and have the chance to roast and taste the nuts each fall; and, especially, should have them for Christmas.

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The Garden of Our Lord

(From page 36)

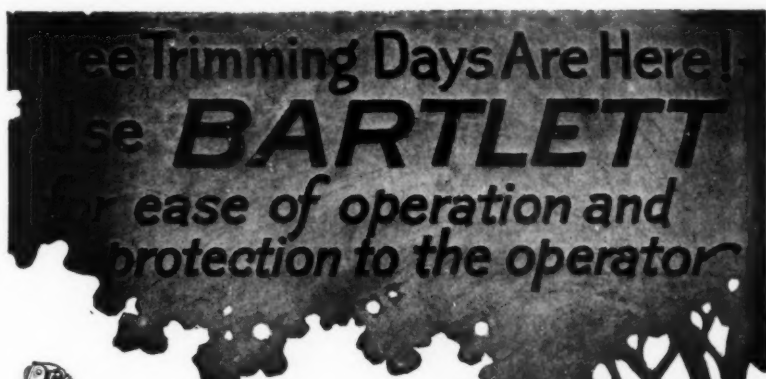
der, made famous by Jews in the days of Babylonian captivity, as they lamented: "We hanged our harps upon the willows in the midst thereof." (Psalm 137.) The problem was solved by planting a willow and an oleander side by side.

Massive ancestors of the red sandalwood trees in the Garden provided the timbers for Solomon's temple, and pomegranates recall that replicas of its fruit were used as decorations on the pillars. Figures of the pomegranate were embroidered also on the gowns worn by the priests. The camphire or henna tree is one mentioned in the Song of Solomon. Mulberry trees played an important role in one of the battles which David fought with the Philistines. At several different spots you will discover myrtle, which Isaiah considered the symbol of a fruitful land.

Not all the plantings in the Garden are of Holy Lands origin, nor are all of them mentioned specifically in the Bible. For instance, there is the "Christmas palm," from the Far East, so-called because it bears clusters of bright red and green seeds, side by side, during the holiday season. In urns along the wall you will see an evil-looking bush whose flowers, like tiny red eyes, peer out from its thorny branches. This is the Christ Thorn, from which the crown of thorns was woven and placed on Jesus' head at the time of the trial.

The Passion Flower, a vine of the New World, was discovered by the early Spanish conquistadores, and was so named because they thought its intricate blossoms represented incidents in the Savior's passion. To them the silky filament suggested the crown of thorns; the stiles, the nails used to fasten Christ to the cross; the leaf, the spear that pierced His side; the tendrils, the whips with which He was scourged; the column of the ovary, the upright section of the cross; the calyx, the "glory" or halo; the white tint of the flower is symbolic of purity, and the blue of heaven.

Another curious plant, the hyssop, is in the Garden for two reasons. One of its common names, "Moses-in-the-bulrushes," derives from the boat-like pod formed by purple and green leaves. In the center hides a small white flower, the whole resembling the ark in which the infant Moses was hidden for safety from



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CITY _____ STATE _____

3-59

Egyptian soldiers. "Moses-in-the-bulrushes" is not related, however, to the real bulrush or papyrus, an early source of paper, which grows here along the edge of the Children's Pool.

There is a grimmer reference to hyssop in the Bible. During the crucifixion, according to John 19, "They filled a sponge with vinegar and put it upon hyssop, and put it in his mouth." Near the hyssop are several aloe plants, of the type used to prepare the body of Christ for burial.

To the Jews of the Old Testament the almond was a highly valued tree, not only because its nut yielded food and oil, but because, as the first tree to show life in the early spring, it became a symbol of awakening. In Numbers we learn that the staff carried by Aaron, when he went with Moses to liberate the Israelites, was made of almond: "Behold the rod of Aaron was budded and brought forth buds, and blossomed blossoms, and yield almonds."

The sycamore, or sycomore, of the Near East does not have the mottled bark of the sycamore of our own northern streambanks. It is an unassuming tree, but it is included in the collection because the small-statured Zacchaeus climbed one to see Jesus as He passed by on His way out of Jericho.

So the Bible here seems to come to life at every turn. Whose was the original idea of creating this unique sanctuary? The association credits a former pastor of the St. James Lutheran Church, the Rev. Theodore Bartus, although many other members of the church and quite a few outsiders did much of the preliminary work and fund raising to get the project started. One member of the church, Hazel Westby, made a special trip to the Near East to obtain seeds, sprouts and cuttings of trees, shrubs and plants which Rev. Bartus had listed after much diligent research.

Quite a number of plantings came from nearby Fairchild Tropical Gardens, where they had been introduced directly from the Near East and proven that they could thrive in the Florida climate. In the years since ground first was broken in the summer of 1951, only one tree prominently mentioned in the Bible has refused to take root. Neither seeds nor cuttings of the famous Cedars of Lebanon have survived a half dozen attempts to get them started. Lack of altitude may be the reason, because the original Cedars of Lebanon grow high in the mountains.

Conflicting identifications of Biblical botany are generally resolved by reference to the enlightening pages of *Plants of the Bible*, by Harold N. and Alma L. Moldenke. The Garden is by no means static, for new seeds and plantings are constantly being offered and added, although not as eagerly received as they were during the early years of the Garden when much of the area was covered only with lawn. Trees and bushes now are beginning to crowd one another, despite judicious trimming, and one balm of Gilead already has soared to a height of nearly fifty feet.

Visitors to the Miami area will find the Garden of Our Lord easy to locate. The entrance is at 110 Avenue Phoenicia, four blocks south of S.W. 8th Street (Tamiami Trail) near the Douglas Road entrance to Coral Gables. One of the best times to stroll along its winding pathways is just before sunset, when the quotation from the second chapter of Genesis, "The Lord God planted a garden eastward in Eden . . . and the Lord God walked in the Garden in the cool of the day," seems to have a richer, fuller meaning.

Perhaps the plaque of dedication expresses it more completely: "To Him, Who carried out God's eternal plan of salvation for lost mankind, yet Who was intensely interested in the ordinary, everyday things of life, Who said 'Consider the lilies of the field . . . even Solomon in all his glory was not arrayed like one of these,' to our blessed Lord and Savior this Garden is dedicated to provide a sanctuary of rest and meditation for all those who wish to draw close to Him."

Small Watershed Projects

(From page 19)

the Arkansas River, draining 164,627 acres in the Franklin and Logan counties of Arkansas. The pilot project started in 1954 is about 92 per cent complete. Twenty-four of the planned 26 floodwater retarding structures have been built and 25 miles of channel improved. Land treatment is nearly complete on more than 1,000 farms which have developed conservation plans in co-operation with the Franklin County and Magazine Soil Conservation Districts, and on 16,000 acres of the Ozark National Forest included in the project.

Cover cropping, pasture seeding, range improvement, and woodland management figure prominently in the treatment. The Forest Service



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and the Arkansas Forestry Commis-
sion have carried on a vigorous pro-
gram of fire suppression and preven-
tion. The Forest Service planted
vegetation on eroded banks and cuts
along forest roads to reduce sedi-
ment damages. Trees have been
planted on 254 acres of sediment-
producing areas. In addition, 309
acres of tree planting on private land
and 304 acres on national forest land
have been completed.

A severe test of Six Mile Creek
came on April 3, 1957, when an av-
erage of 4.27 inches of rainfall covered
the watershed after the soil was al-
ready saturated and all floodwater
retarding structures were discharg-
ing through their principal spill-
ways. Yet, all runoff was contained
in the detention reservoirs so that no
emergency spillways operated. Flood-
ing did not occur on any tributary
on which floodwater retarding struc-
tures had been completed. Flooding
did occur on the uncontrolled tribu-
taries and on the main stem of Six
Mile and Hurricane Creeks, inun-
dating 5,060 acres, or 50.1 per cent
of the flood plain, with damages
amounting to \$6,795.

Without the existing protection,
it was estimated that 9,430 acres
would have been inundated, with
damages of \$14,375. Had the entire
program been complete, total dam-
age would have been about \$3,325.

A summary for the year 1957,
when rainfall on the watershed av-
eraged 65.58 inches and exceeded the
average annual rainfall by 59 per
cent, indicated that actual damage
to crops and pasture from floodwater
amounted to only \$3,355—93.7 per
cent less than an estimated damage
of \$53,865 without the program.
Other agricultural damage was re-
duced 81 per cent, from \$7,900 to
\$1,500, and non-agricultural damage
72.5 per cent, from \$6,865 to \$2,030.

These add up to a total reduction in
flood plain damage of 89.9 per cent
—from \$78,740 to \$8,020.

The agencies assisting with the
program agree that it could not have
been successful without the excel-
lent local cooperation that has been
evident throughout. The Soil Con-
servation Service designated the
watershed for one of the new pilot
projects in October 1953, on the
basis of formal assurance from the
local soil conservation districts that
they would sponsor the program.

The districts incorporated into
their own work plans the land treat-
ment measures that were of direct
concern to them. Through mass
meetings, newspapers, and other
educational channels, they informed
the people of the problems and the
opportunities presented by the proj-
ect. The people responded with
enthusiasm by providing dam sites,
installing conservation practices, and
doing the other things that needed
to be done to make the project work.

Perhaps the biggest single prob-
lem was providing easements for the
dam sites—a requirement that had to
be met locally before the federal gov-
ernment could proceed. Absentee
ownership proved to be a great ob-
stacle. Local citizens made trips to
distant states to obtain signatures
where correspondence and phone
calls had failed. In some cases adja-
cent owners purchased lands to clear
up easement problems.

One local banker, "Long John"
Williams of Booneville, now de-
ceased, accounted for a large seg-
ment of easements in his trade terri-
tory. He bought a new cook stove
for one lady to persuade her to ex-
ecute an easement. In another in-
stance, he paid the travel costs for
an absentee owner in Wyoming to
come to Booneville, so the man
could review the project plans and
sign a needed easement.

The people of the watershed have
been rewarded not only by the suc-
cessful reduction of floods on the
12,000 acres of bottom land, but by
unexpected benefits from the water
stored in the sediment storage pools
of the detention dams. Two new in-
dustries already have located in the
area because of this water supply.
One, a rubber comb manufacturer,
is already in operation in Bonne-
ville. The plant employs 200 people,
and its half-million dollar payroll is
a boon to merchants, bankers, and
others in the community. A hosiery
company, now constructing a large
plant near one of the reservoirs,
will employ 800 local people.

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The Arkansas Game and Fish Commission has furnished fish to stock the sediment pool of each completed reservoir. Several of the lake sites have been leased for recreational purposes, and owners receive good monetary returns that help defray the cost of maintenance.

Washita River Subwatersheds

Out on the prairies of western Oklahoma, where tree planting is confined largely to shelterbelts and farmstead windbreaks, the combination of land treatment and upstream structures is proving as effective as in the forested watersheds of the East.

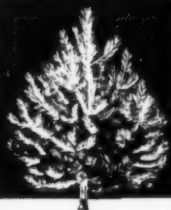
Several subwatersheds of the Washita River basin, one of the 11 authorized flood prevention watersheds, have been treated according to the same pattern used in the pilot projects. Land treatment here consists of cover crops, stubble mulching, grass seeding, terracing, and other practices applicable to croplands and pastures. During the excessive rains of the spring of 1957, these treated watersheds performed with decorum; while untreated watersheds beside them flooded in the usual manner.

Barnitz Creek is an example. From March 1 to mid-June it received 31.6 inches of rainfall. One day (April 29) it rained 3.8 inches, and once rainfall intensity reached 2 inches in thirty minutes. At least four of the storms would have caused floods before treatment, but there was no flooding and no damage on the 178,674-acre watershed. Beaver Creek, an adjacent 56,088-acre watershed without treatment, flooded 1,045 acres, causing damage estimated at \$16,000.

Chigley Sandy Creek is another of the treated subwatersheds. It has a drainage area of 29,349 acres, with 3,354 acres of flood plain. Between March and June five storms, with rainfall ranging from 2.5 to 9 inches in 36 hours, occurred in this watershed. Since water was discharged through the emergency spillways of 11 of the 14 structures, the total flooding affected only 94 acres and caused damages of \$4,700. Residents estimated that the flood plain would have been covered at least four times, had the program not been in effect.

Rainfall of nearly equal intensity fell on the adjoining Kickapoo Sandy Creek watershed and caused three major floods. Damages were appraised at \$122,000. Had a flood prevention program been in effect, it is estimated that the damages

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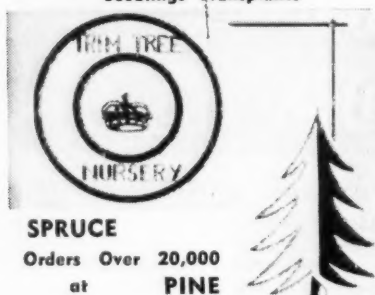
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Although the Washita River sub-watershed treatment is administered by the Soil Conservation Service, the initiative and cooperation of local citizens is responsible for the good progress of the work. As early as the mid-Thirties, a Washita Valley Soil Conservation and Flood Control Association was formed. It sponsored soil conservation demonstrations and the work of the CCC camps. In the 1940's it was succeeded by the Washita Valley Improvement Association, which took the initiative in advancing flood prevention activities.

Today there are 19 soil conservation districts in the Washita drainage area. They have formed the Washita Valley Council of Soil Conservation Districts, which has taken over the work of the Washita Valley Improvement Association. The council recommends to the Soil Conservation Service the priority of creek subwatersheds for planning and construction. It also sees that easements and rights-of-way are provided, and helps neighborhood groups with local problems in advancing the community-wide program.

Salem Fork

Salem Fork is a small, steep watershed of 5,325 acres in the mountains of northern West Virginia which drains ultimately into the Monongahela River. It is the site of another of the pilot projects started in 1953. The last of seven floodwater retarding structures was finished in September, 1958. In addition, there is a multiple-purpose structure that provides water for the city of Salem (paid for by the city), and two miles of channel improvement.

Land treatment is about half complete. Reforestation and woodland management are major items in this watershed. The city of Salem has reforested all the upland area it owns above its reservoirs. Alto-

gether, about 11 per cent of the watershed will be planted.

Salem Fork has not had a severe flood test since the retarding structures were completed, but the people are already counting project benefits. Foremost is a dependable supply of high-quality water. Before the reservoir was completed, water was rationed to the residents of Salem. The reservoir also provides fishing and other recreation. The sediment pools of the detention structures are producing fish and attracting wildlife.

The Upper Tenmile Watershed Association and the West Fork Soil Conservation District are joint sponsors of the project. The watershed association has provided general leadership and obtained easements and rights-of-way. Local citizens devoted a great deal of time to securing easements, raising funds, arranging for cooperation with utility companies and the State Road Commission, and holding promotional events. Utility companies have relocated pipe lines and power lines, largely at their own expense, and the state relocated roads at three sites.

The watershed association paid for moving farm buildings, constructing fences, and even building a new barn, to obtain sites for the structures. When easements for one dam site could not be secured, the association arranged for the sale of two farms to new owners agreeable to the proposed construction.

The city of Salem is active in operating and maintaining the structural works.

Where Local Action Lagged

Not all small watershed projects have been as successful as the examples cited. Seven of the pilot projects were discontinued because of apparent lack of local interest, failure to obtain easements, or other obstacles. Nine are still less than 50 per cent complete.

Difficulties over easements and rights-of-way are delaying progress in several other projects, both in the "pilot" group and in the 11 authorized river watersheds. In some cases, the completion of the final one or two structures is blocked by lack of agreements which only local people can provide.

Soil conservationists and foresters know that partial treatment seldom solves a watershed problem. Experience already makes it clear that the necessary combination of complete land treatment and water-control structures will be attained only

where two conditions are fulfilled: (1) the watershed problem is understood and recognized by the local people, and (2) those people take the initiative to see that the necessary corrective measures are carried out.

Under those conditions, federal and state agencies can provide technical, cost-sharing, and educational services in effective combinations to deal with each local situation.

Mastering a Menace

(From page 39)

patched reconnaissance parties to check up on the situation. At that moment it was an unexpected phenomenon, and its power as a new and sinister enemy was not fully assessed.

Helped by a slight wind, the fire spread with horrifying rapidity through the tinder-dry forest. Troops were hastily formed into teams of fire fighters, equipped with rakes and spades and any tools at hand. Together with men from the surrounding mountain villages, they were flung into the battle to stop the blaze. But it was too late, and tragedy struck. A party from a Scottish regiment, trapped in a timbered, rocky defile, was suddenly engulfed on all sides by the roaring flames, and could not escape. Twenty-two officers and men perished in the holocaust or died later in the hospital. Thus was the terrible power of the forest fire enemy brought home in full and bitter measure.

An immediate Military Court of Inquiry was set up, and carried out a ruthless and marathon investigation. Unfolded before its members were tales of suffering and death, and of individual heroism and bravery later rewarded by honors to personnel of both Army and Department of Forestry. Within a week the findings of the court were laid before the general in command of Cyprus District, and from his HQ came a top priority order: All troops on operation would be trained in the technique of forest fire fighting in Cyprus.

An immediate problem arose—to find a unit capable of undertaking the training task as quickly as the circumstances demanded. The answer was provided by the Royal Army Service Corps with its Training School, which had a fire training wing and was immediately available on the spot. Thus were born, simultaneously, a new emergency and a new job for the RASC in Cyprus.

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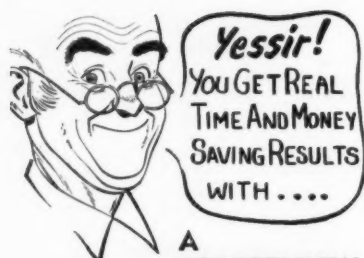
ASSETS		LIABILITIES AND SURPLUS	
Cash	\$108,232.88	Accounts Payable	\$ 15,731.86
Accounts Receivable	2,772.39	Other Current Liabilities	1,613.35
Inventories	15,757.46	Deferred Income	95,890.44
Furniture and Equipment (Net)	17,200.17	Reserve for Future Expenditures	24,441.95
Other Assets	897.81	Surplus	311,472.43
Endowment Fund Assets	304,289.32		
Total	\$449,150.03	Total	\$449,150.03

INCOME AND EXPENSE ACCOUNT FOR THE YEAR ENDING December 31, 1958

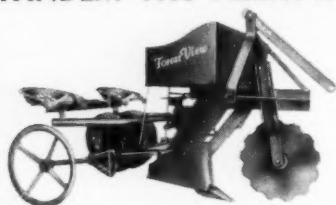
EXPENSE		INCOME	
Membership	\$ 56,203.83	Membership Dues	\$183,796.97
American Forests Magazine	138,465.87	Advertising	64,809.51
Sales	10,776.91	Sales & Miscellaneous Income	18,974.70
Conservation Department	68,761.84	Trail Riders	56,511.93
General Administration	64,169.10	Contributions & Bequests	43,535.49
Total Expense	\$338,377.55		
Excess Operating Income over Expense	29,251.05		
Total	\$367,628.60	Total	\$367,628.60

In our opinion the above condensed Balance Sheet and Income and Expense Account, fairly present, respectively the financial condition of The American Forestry Association at December 31, 1958, and the results of its operations for the year ended on that date.

SNYDER, FARR AND COMPANY
Certified Public Accountants



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Rapid action by the school's commandant established liaison with the experienced divisional forestry officers and their staffs high up in the mountainous ranges. Daily, the school staff attended lectures, watched, studied, and acquired hard practical experience. Soon principles were absorbed, programs outlined, and cooperation between Army and Forestry increased. Demonstration troops were next required; and, high up amid the pines and cool air, far away from the hot, steaming plain, the men got down to the job with a will and spirit which were later to become a tradition.

Apart from terrorist-hunting, just how important for Cyprus is the business of forest fire fighting? First let us look at some facts about the forests there. Most of the forested area lies on the mountainous ranges in the northern and western parts of the island. There are some 617 square miles of state-owned forest, and about 50 square miles are privately held. The combined total represents nearly 19 per cent of the whole land surface. Up to the height of 4,000 feet above sea level, the commonest tree is the Aleppo pine, and above that, on the slopes towards Mount Olympus (over 6,000 feet) the Troodos pine grows thickly. Some cedars still survive from the past and are well protected, while cypress trees flourish everywhere. Down in the valleys there are hardwoods, plane, alder, and walnut, plus a bushy type of golden oak and arbutus.

As development continues, some fifty varieties of eucalyptus are being tried out with other species. The annual production of timber is around one million cubic feet, worth about \$280,800.

But these are only statistics. What is much more important is the incalculable value of the forest in terms

of climatic protection, water supply, and soil retention. Without the trees, the mountain soils would be washed away in the winter rains and the agricultural plains at once imperiled. Finally, in normal times there is the high aesthetic value of the forest to tourists and inhabitants alike, offering beauty, color, and coolness far above the arid, dusty central plain. To preserve, maintain, and develop such vital interests for Cyprus, the Government Forestry Department strives diligently, overcoming ignorant prejudice, preventing indiscriminate felling, and fighting the ancient menace of fire. As a result, the Cypriot forests are in better condition than others in the Middle East, but a great deal remains to be done. And it is the forest fire which is still the greatest single danger to progress.

There is no great mystery in the technique of fire fighting on Cyprus. The theory is simple, but the judgment requires experience and much local knowledge. As in many other countries, and no matter what the cause, two main kinds of forest fires can occur. There is the "ground" fire burning only litter and undergrowth, and the "crown" fire which burns the tops of living trees as well. There are the usual factors which affect the rate of spread and general severity of the fire, including the moisture content of the trees and the wind movement.

Most ground fires, unless caught at once, rapidly turn into "crown" fires and tend to proceed uphill, creating wind eddies and increasing in speed until the flashing progress, faster than a man can run, is awe-inspiring to watch. With no question of "putting" the fire out, in the accepted sense, it must then be segregated, contained, and allowed to burn out under human control.

In Cyprus, the method of doing this is to cut fire "traces" (breaks) on the nearest ridge-slope above the fire and down the flanks of the elongated cone shape it assumes, and then dig a trench at the bottom of the fire to contain rolling debris, and prevent fresh outbreaks elsewhere. The break cut along the top of the ridge is called the "main trace," and those on the flanks "secondary traces." The widths of the traces vary, with "mains" from three feet wide for a bush fire up to fifty feet for a "crown" fire. To be effective as "stops," the traces must be absolutely clear of all undergrowth, roots, branches, and stubble, and this requires a lot of manpower well-

MEMBERSHIP APPLICATION

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Please enroll me as a Member of The American Forestry Association. Enclosed find \$6.00 to cover dues for one year, (Including subscription to AMERICAN FORESTS Magazine). My name and address is:

Name _____

Street _____

City and State _____



HAS IT OCCURRED TO YOU?

There are many members and friends of The American Forestry Association who find it impractical to contribute to its educational activities during their lifetime. Gifts in the form of a bequest are welcomed. Officers of the Association will gladly consult at any time with those who wish to know more about designating gifts for educational work in forest conservation.

Following is a paragraph suitable for incorporation in wills:

"I hereby give, devise and bequeath _____ to The American Forestry Association, Washington, D. C., a non-profit District of Columbia corporation, or its successor, or successors, for the purpose of promoting the corporate activities of said Association."

THE AMERICAN FORESTRY ASSOCIATION

919 Seventeenth Street, N.W.
Washington 6, D. C.

equipped with axes, spades, mattocks, rakes, and small cutting tools. Of course, fire fighting anywhere always depends, in the last resort, on the "will to win" of the fighters—their tough strength and sheer determination. The steep, rocky slopes of the Cyprus mountains in mid-summer certainly demand no less.

At last came the day of the Army's forest fire fighting demonstration. The site chosen was on a saddle of the hills in the Paphos Forest, overlooking a desolate series of grey, bare slopes devastated by a previous fire. Forestry had agreed to the sacrifice of a portion of natural timber behind the site. An infantry company was to "discover" the fire, cut the traces, and deal with it. Men from every unit employed on internal security duties were there to watch and learn. Senior officers and their staffs arrived by helicopter and jeep to observe this very unusual military exercise.

The program opened with a brief summary of the problem, and a talk by Forestry on the nature of the enemy. Forest tools were tried out individually and then used in team formation as a drill. The colonels and the privates lopped, raked, and shovelled with a will. Then the event of the day—the "live" fire.

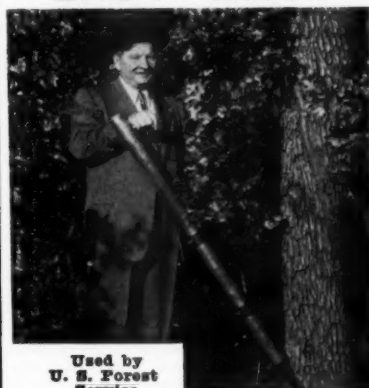
Far downhill they saw a faint billow of smoke rising upward in the hot afternoon sunshine. Seconds later the billow became a spinning column, a pirouetting cloud which spiralled uphill towards the watchers at a seemingly slow rate, with black smoke eddying above the darting flames in the undergrowth. Almost immediately, warnings were transmitted over the "loud hailer," and first orders came from the infantry platoon "caught" in the outbreak. Soon the flames, gathering and vicious, mounted ever higher in the scrub and trees, and ever faster uphill.

Now came the orders from the major to his men, and the infantry scrambled and scurried along the main trace and down the flanks, cutting, hacking, and scraping away for all they were worth. By this time the fire was raging upwards—a "crown" fire, a real menace—and the spectators craned forward to see the ancient enemy. It reached the traces and halted, crackling hungrily at the edges, but contained, and left for time to conquer.

The demonstration was over. But as a spectacle and a visible, tangible example of the menace which could be overcome, the impressions re-

(Turn to page 61)

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The REUEL LITTLE TREE INJECTOR
Makes it easy and economical to cull trees in timber or kill worthless trees in pastures. Easy to use and carry, weighs only 11 lbs. No re-sprouts. Safe for livestock. No crop damage. Cost about \$4 per acre. Sure kill every time. Without obligation, get the facts about this new injection method of killing unwanted trees.

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Address _____

Q. Am interested in buying 50 to 100 acres to reforest.

Barton Chigman
Los Angeles, California

A. If you plan to buy forest land and have had no previous experience in this field, you can profit from the advice and guidance of an expert in such matters. Please contact Mr. Emanuel Fritz, 102 The Uplands, Berkeley 5, California.

Q. What causes spiral grain in trees?

C. C. Whitlaker
Pittsburgh, Pennsylvania

A. Spiral grain results from the spiral alignment of wood fibres in the tree. It may be either right or left-handed. There is some evidence that it is hereditary. The cause of spiralling has never been explained satisfactorily.

Q. Is there a liquid that can be applied to the lower part of standing trees that will cause the bark to fall off? I wish to cut these trees for pulpwood and, if possible, save the labor of peeling them.

E. J. Harman
Trenton, New Jersey

A. The most effective chemical for debarking is a 40 per cent solution of sodium arsenite. Mix one pound of sodium hydroxide with three pounds of arsenic trioxide in water to make one gallon of solution. Girdle the tree near the ground during May, June or July and apply the solution to the peeled surface. By the following Spring the bark should come off easily.

Q. We would like to form a marketing association for Christmas trees. Where can we get information?

L. Dale Batdorff
Rudyard, Michigan

A. Mr. M. C. Stewart, President, National Christmas Tree Growers' Association, R. #2, Homer City, Pennsylvania.

EVERGREEN HEDGE

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American Arborvitae, 5 yr. transplants 10 to 15". Beautiful evergreen hedge. Shear to any shape or height. Postpaid planting time.

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SEEDLINGS and TRANSPLANTS
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For insect bites too! 1 1/2 oz. - 3" x 1", three suction cups, instructions, lancet. Smallest effective kit (official BSA). If not available send \$2.50 cash, check or money order. (No C.O.D.s) Dept. 8-67c Cutter Laboratories, Berkeley, Calif.

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AFA MEMBERSHIP

Any person or company may become a member of The American Forestry Association upon application. There are five classes of Membership:

Subscribing, per year	\$6
Subscribing, 2 years	11
Contributing, per year	10
Sustaining, per year	25
Life (for individuals) no further dues	150
Patron (for individuals) no further dues	1000

All members receive monthly copies of AMERICAN FORESTS Magazine.

Q. How can I control aphid and lacebugs?

J. Stewart Bankert
Sykesville, Maryland

A. These are sucking insects and readily controlled by spraying with malathion. The application should be made in early spring just as the leaves are unfolding.

Q. How do you prune ornamental trees such as chestnut and holly?

Oswald Christensen
Pleasant Plains, N. Y.

A. The new "Tree Expert's Manual," by Richard R. Fenska, covers the pruning of ornamental trees.

Q. Will you give us the title of a publication concerning a charcoal kiln, how to prepare material, etc.?

Dahlia E. Callis
Mathews, Virginia

A. Bulletin II, "The New Hampshire Charcoal Kiln," is available at 50 cents per copy from the New Hampshire Forestry and Recreation Commission, Concord, N. H.

Q. I would like to buy some forest land in New Jersey and plant it to trees. Can you help me?

Mrs. Jerry C. Davis
Newark, New Jersey

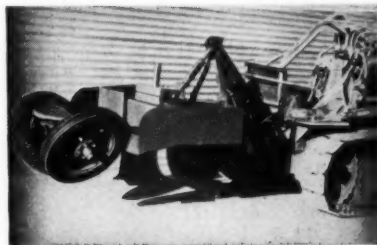
A. Please get in touch with Mr. E. B. Moore, 413 Sked Street, Pennington, New Jersey. As a consulting forester he can advise you on timberland investments and planting.

Mastering a Menace

(From page 59)

maintained and the lessons were clear. The rest was a matter for unit teams and instructors. The value of the training emerged soon afterwards in a local newspaper: "The fire in the Paphos Forest was brought under control at 2 a.m. yesterday. About three squares miles of good forest was destroyed, but there were no casualties. At least 1,000 troops took part in fighting the fire. Paying tribute to their efforts, the Forestry Department said, 'This has been an outstanding example of full cooperation between the Security Forces, Forestry, and men from the villages. Working side by side they made the complete control of a large fire possible in a relatively short space of time' . . ."

During its long history, the British Army has had to learn many important lessons the hard way. But it seldom forgets the value of the training it has received.



SCM MODEL TREE PLANTER

Available for D2, T6, TD6, 40C 420C.

Our five distinctly different models are designed for deep penetration and high survival in all soil conditions and terrain.

No distorted roots when Lowther machines are used.

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- Longleaf
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REPELLENT ON REQUEST**

*Write for simple planting instructions
on direct seeding.*

SOUTHERN SEED COMPANY, INC.

Collectors and Distributors of Tested Tree
Seed Specializing in the Southern Pines

BALDWIN, GEORGIA

PHONE 649

WASHINGTON LOOKOUT—(continued from page 10)

FORESTRY IN THE FEDERAL BUDGET

(Fiscal Year Ending June 30, 1960)

U. S. FOREST SERVICE	1959 Estimated	1960 Budget
Forest Protection and Utilization		
Timber sales administration and management	\$ 13,520,000	\$ 16,320,000
Reforestation and stand improvement	3,015,000	3,015,000
Recreation and public use	9,985,400	8,500,000
Wildlife habitat management	805,000	805,000
Range management	1,670,000	1,670,000
Range revegetation	1,500,000	1,500,000
Range improvements	1,600,000	1,600,000
Soil and water management	1,370,000	1,370,000
Mineral claims, leases, etc.	3,385,000	3,385,000
District ranger activities	7,384,000	7,384,000
Land utilization projects	1,400,000	1,400,000
Protection—fire	12,335,000	12,335,000
Structural improvements	10,625,000	8,250,000
Fighting Forest Fires	5,000,000 ^a	5,000,000
Insect and Disease Control	6,608,600	5,881,800
Acquisition		
Weeks Act	100,000	100,000
Cache National Forest	50,000	50,000
Special Acts	10,000	10,000
Research		
Forest and range management	6,880,000	6,880,000
Fire control	785,000	785,000
Insect	915,000	915,000
Disease	740,000	740,000
Forest Products Laboratory	2,794,400	2,794,400
Forest survey	1,490,000	1,490,000
Economic	422,000	422,000
Construction, research facilities	2,500,000
Roads and Trails—construction and maintenance	26,000,000	24,000,000 ^b
State and Private Forestry		
Forest fire control	10,085,000	10,085,000
Tree planting	790,000	290,000
Forest management and processing	1,522,000	1,522,000
General forestry assistance	410,800	410,800
TOTAL U. S. FOREST SERVICE	\$135,697,200	\$128,910,000
DEPARTMENT OF THE INTERIOR		
<i>Bureau of Land Management:</i>		
Management of Lands and Resources		
Forestry	\$ 5,411,600	\$ 5,268,700
Soil and moisture conservation	3,821,000	3,733,900
Fire suppression	400,000	400,000
General administration	1,496,100	1,531,100
Cadastral surveys	2,504,700	2,800,000
Maintenance of access roads	254,000	254,000
Other	10,347,247	10,389,300
O & C access roads; buildings; recreation	4,685,000	5,200,000 ^c
Range improvements	686,713	776,000 ^d
TOTAL BUREAU OF LAND MANAGEMENT	\$ 29,606,360	\$ 30,353,000
<i>Bureau of Indian Affairs (Forestry and related items only):</i>		
Forest and range management	\$ 3,066,000	\$ 3,066,000
Fire suppression	140,000	140,000
Road construction and maintenance	12,000,000	14,600,000
<i>National Park Service (Forestry and related items only):</i>		
Forestry and fire control	\$ 925,205	\$ 967,205
TENNESSEE VALLEY AUTHORITY		
Watershed protection and improvement only	\$ 1,058,000	\$ 1,094,000 ^e

^a To be increased by a supplemental request for an additional \$7,500,000.^b In addition, about \$11,400,000 will be available from road and trail fund. (Also add \$8,885,000 to 1959 figure.)^c Includes \$100,000 for buildings.^d From grazing receipts.^e About equally divided between forestry and tributary watershed projects.

The Muskingum Stands Firm

(From page 8)

servancy District had not been in operation, tell the story:

	Actual Stage 1959	Stage with- out dams 1959
New Philadelphia	7.8'	14.6'
Newcomerstown	9.6'	17.0'
Coshocton	13.2'	25.1'
Dresden	20.5'	34.1'
Zanesville	30.7'	42.1'
McConnelsville	14.4'	22.1'

The following tabulation is the storage effected in the various reservoirs of the district, together with the percentage of storage utilized in each individual case:

Reservoir	Storage above permanent pool level January 1959	Percent- age of Capacity
Atwood	5.16 feet	34%
Beach City	24.74 feet	74%
Bolivar	49.01 feet	42%
Charles Mill	16.53 feet	58%
Clendenning	2.44 feet	17%
Dover	43.65 feet	42%
Leesville	3.86 feet	23%
Mohawk	74.74 feet	62%
Mohicanville	24.85 feet	54%
Piedmont	3.86 feet	27%
Pleasant Hill	24.01 feet	41%
Senecaville	4.64 feet	39%
Tappan	4.10 feet	25%
Wills Creek	22.17 feet	35%

Not only did the Muskingum dams and reservoirs contain one of the worst floods in years, but they still had plenty of capacity left, the engineers report shows. This year, 47 per cent of the storage available behind all district reservoirs was utilized. The highest amount of storage used previous to this year was in 1947, when 38 per cent of the storage capacity was utilized.

It is fairly definite that in at least two spots in the unprotected areas of the district flood crests exceeding 1913 crests were reached, district officials said. These were at Mt. Vernon, on the Kokosing, where 31.5 feet was reached, and at Toboso, where there was a crest of 21.5 feet. In 1913, crests were approximately 1½ feet lower than these figures.

Flood control is the basic purpose for which the Muskingum Conservancy District was authorized. "Under the Conservancy Act as it is at present, the district may construct flood control structures after they have

been recommended by the board of directors and approved by the court, and after each individual property or political subdivision to be benefited by the flood control has been appraised as to this benefit and an assessment made against them to pay for the construction and operation of the project.

"The major problem which affects all flood authorities today is that of discouraging or stopping construction in the low-lying areas which are still subject to flooding under maximum flood conditions," district officials warned. "People's memories seem to be so short that they do not realize that an area has been flooded previously, or do not desire to believe that an area might be flooded, even though they are within an area where there is flood control. We hope that some type of zoning may be effected to stop this construction, and thus to stop financial losses for which individuals are laying themselves open by building in the low areas."

Two interesting sidelights to the flooding outside of the district were reported, both pertaining to Columbus. For some years the controversial Scioto-Sandusky Conservancy District has been a bone of contention. Had it been constructed as planned, Columbus wouldn't be digging itself out of the mud today, many experts say. Just about two weeks prior to the most recent big flood, the judges of the district voted twelve to five to disband it, and they put in as president of its board of directors a citizen who was the district's foremost opponent in calling for its death. The day after the flood, the Judge of the Common Pleas Court of Columbus, who had made the original motion to disband, wrote the sixteen other judges to see if they might not care to reconsider their decision.

While most of the news was bad last month from the five-state area stricken by flood waters, one rose among the thorns was the Muskingum Conservancy District, which had the foresight to come to grips with the problem and created a self-governing, tax-paying district with an international reputation. Not only have floods been licked, but sick land has been restored to good health, young forests are thriving, wildlife management is on the upswing, and the district's chain of man-made lakes draw tourists from a tri-state area. (J. B. C.)

BETTER SURVIVAL, BETTER GROWTH WITH ROOTSPRED TREE PLANTERS



ROOTSPRED "Lake States" Scalper reduces competition 15" each side of planted tree.

- For effective scalping — north or south, heavy soils or light
- A deeper trench with soil loosened below root level
- A dependable satisfaction guarantee
- An economical model for Christmas Tree Growers
- Also a production plantation mower—double rotary

For specifications, prices, photos, write:

ROOTSPRED
St. Petersburg, Pennsylvania

HOW MUCH WOOD PER ACRE DOES YOUR FOREST GROW?

How much
wood is there in
that tree?

THE
**SPIEGEL-
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gives all the
answers.



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scale
Aim at
Tree-top
and read
Height
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from
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Feature Photo of the Month

Photos used on this page will be of unusual rather than esthetic qualities and subject matter will be restricted to scenes, events, objects or persons related to the use, enjoyment or unique aspects of our renewable natural resources. For each picture selected, AMERICAN FORESTS will pay \$10



Soaring 195 feet into the Oregon sky, the world's largest Sitka spruce tree has been permanently protected from cutting. It was recently made a part of Crown Zellerbach's Necanicum picnic area on the company's Clatsop Tree Farm in northwestern Oregon. Highclimber Jim Hutchens, Seaside, Ore., prepares to remove dead limbs, part of the necessary maintenance required to keep the lofty giant healthy. The spruce is 15 feet, 9 inches in diameter, 4½ feet above ground, and measures 60 feet to the lowest limb. It is located on the Sunset Highway (U. S. 26), five miles south of Seaside and two miles east of the junction of Highways 101 and 26, in a five-acre tree farm park dedicated to the enjoyment of Oregonians and tourists.



EXTRA LUGGING POWER NEW HOMELITE



The new Homelite 7-21C provides all of the extra lugging power you need for felling the big ones! Using a gear ratio of 2.84 to 1, it cuts through 20" trees in 18 seconds, fells trees up to 7 feet in diameter.

Its balanced 21 pounds* means easier, safer handling in any location, any cutting position. Big fuel tank gives you more cutting time between refuelings. And the Homelite 7-21C has all of the famous Homelite Magic 7 features: tough, drop-forged, counterbalanced crankshaft — famous Homelite high



Gear Drive
21 Pounds
Guaranteed for 7 months
Straight blades from
14" to 60"
Plunge cut bow 16"

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COST OF CLEARING? **only \$8.53 an acre with this D6!**



South of North Bend, Oregon, the Menasha Wooden Ware Corp. initiated a reforestation program on 1,000 acres of logged over land. The area was hilly and heavy with dead logs, stumps, brush and small alder. For clearing sections like this, the company used a Cat D6 Tractor with No. 6S Bulldozer and a winch pulling a disc harrow. The disced strips, 7 feet wide and 10 feet apart, were laid out on contour. Production: 1.2 acres an hour at the cost of only \$8.53 an acre. Said Ralph W. Horn, Land and Timber Manager: "For size, power, cost and maneuverability, the D6 is tailored for this job."

From clearing through planting, that sums up the low-cost answer to *any* phase of reforestation—the right tools for the job on hand. Here the D6 proved itself the right power tool. Built to outwork any tractor of comparable size, the D6 combines high production and availability with low-cost operation and maintenance. For instance, its Caterpillar Engine operates without fouling on economy-type diesel fuels. Its exclusive oil clutch delivers up to 1,500 hours without clutch adjustment.

Is the D6 the best answer to your site preparation work? That depends entirely on the job. You may find that a D4, D7, D8 or D9—or a Traxcavator—serves

your purpose best. For dollars-and-cents figures about their performance on all phases of reforestation, see your Caterpillar Dealer!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

**Forest site preparation
— machine-and-method
cost studies available**



Growing a profitable crop at the lowest possible cost calls for methods and machines best suited to each phase of the operation. Complete cost studies, compiled from actual jobs, are available on the following subjects: Stump Treatment; Stump Clearing and Tree Cutting; Chaining; Raking and Windrowing; Harrowing; Planting. For information, write Logging Section, Caterpillar Tractor Co., or call your nearby Caterpillar Dealer.

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